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ABSTRACT

A handbook for graduate teaching assistants at Colorado State University includes suggestions to improve teaching and information on teaching and learning resources. Faculty teaching responsibility is discussed, along with 10 factors related to effective teaching and learning, including enthusiasm, knowledge of subject, and organization and preparation. Suggestions are offered for planning teaching activities and formulating instructional objectives. Appended resource materials include four idea papers from Kansas State University: "Improving Lectures" (William E. Cashin); "Improving Discussions" (William E. Cashin and Philip C. McKnight); "Improving Multiple-Choice Tests" (Victoria L. Clegg and William E. Cashin); and "Improving Essay Tests" (William E. Cashin). Also appended are articles and resource materials: "Laboratory Teaching" (Stephen Thompson); "Evaluating and Improving Your Teaching" (adapted from a chapter by John Boehrer in Harvard University's teaching handbook); "Your Role as Counselor/Referral Advisor"; a Colorado State University statement on sexual harassment; information on additional teaching and learning resources at Colorado State University; an annotated bibliography on college teaching; and Colorado State University's Student Course Evaluation rating form. (SW)

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The materials in the Special Collection on the Training of Teaching Assistants were developed through the active efforts of numerous educators who first met at the 1986 National Conference on the Institutional Responsibilities and Responses in the Employment and Education of Teaching Assistants held at the Ohio State University. Assisted by more than 80 individuals, the committee chairs listed below were able to establish the collection which will be developed and maintained by the ERIC Clearinghouse for Higher Education. This arrangement will enable faculty members, faculty developers, administrators, TA supervisors, and graduate teaching assistants to have access to TA training materials produced by institutions across the nation.

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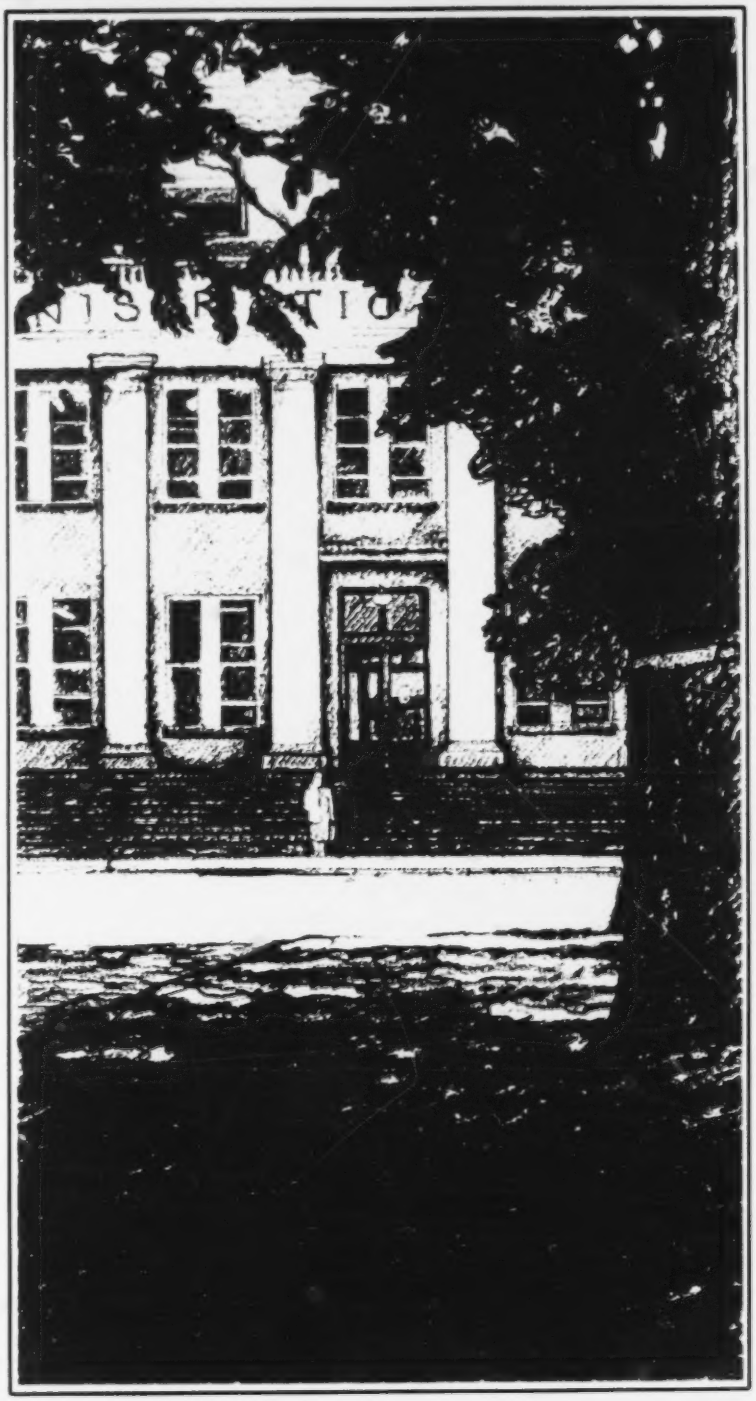

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The Teaching Assistant Handbook

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Colorado State University

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The Graduate School & The Office of Instructional Services

THE TEACHING ASSISTANT HANDBOOK

by

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Department of Psychology
and Office of Instructional Services

Distributed by
The Graduate School
The Office of Instructional Services
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August, 1987

Dear Graduate Teaching Assistant:

I wish to extend my welcome to each of you as a Graduate Teaching Assistant at Colorado State University. Undertaking your responsibilities as a teaching assistant provides you the opportunity to develop professionally as a teacher and scholar. You, in turn, provide an important teaching dimension to our undergraduate student body.

As teachers we are also learners. The teaching-learning process informs us of our strengths and limitations, as well as our potential for achievement. It is a process of fulfillment, satisfaction, and challenge. We will do our best to assist you through departmental and university efforts.

We take teaching seriously here at Colorado State and this handbook provides valuable information on some of the essentials related to success as a college teacher. We value your contributions to the life of the mind, and I want you to know that you have my full support in your teaching and intellectual endeavors. Your role in working with undergraduates is a high priority for our university. Therefore, I wish you success in developing your full potential as a Graduate Teaching Assistant.

Sincerely,

Philip E. Austin
President

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FOREWARD

Dean Jaros
Dean, The Graduate School

A good teaching assistant program is vital to any major university. It is a mechanism by which financial support is provided to a significant portion of the graduate student body. Graduate students gain valuable experience in interpersonal relations. They gain teaching skills, which are often critical to future careers. Graduate students may even learn about the fundamental principles of their disciplines -- sometimes lost in the hustle and bustle of the rest of a specialized degree program. Undergraduates, too, have a lot to gain. If the teaching assistant system operates properly, they receive first rate instruction from enthusiastic and responsible individuals.

Colorado State is dedicated to proper functioning of the teaching assistant system. This Handbook represents part of that dedication. It does essentially two things. First, it lays out principles about teaching that are valid for any discipline or type of instruction. There is a number of practical suggestions that derive from these principles. Second, the Handbook identifies opportunities and services available to teaching assistants as they discharge their responsibilities. While it is of course the case that the major supervision and monitoring of teaching assistants will come directly from the academic departments, there are some options provided by the Office of Instructional Services and the Graduate School.

Let me welcome you as colleagues in the instructional mission of Colorado State University.

INTRODUCTION

This Handbook is written to help you in your role as a Graduate Teaching Assistant. As a facilitator of student learning, there are many things you may want to consider as you plan the course activities associated with your teaching responsibilities. The assumption which governs much of what we do as college teachers suggests that, "to know is to be able to teach." In fact, however, teaching requires a complex set of skills which, for the most part, can be learned. Your own experiences as a student have most probably shown you that approaches to teaching vary considerably. Some are more effective than others. Many of the behaviors related to teaching and learning have been researched in detail and continue to receive attention from astute investigators. Research devoted to the conditions contributing to effective learning has established a body of knowledge which provides a basis on which to formulate our own teaching strategies. The practice of our profession is a discipline with its own principles, theories, desirable practices, and yes, folklore. The topics presented in this Handbook represent a synthesis of pertinent research and inquiry directed toward making you more effective as a teacher.

As you engage in the excitement of helping others to learn, you will discover the many pleasures and frustrations associated with this important responsibility. To assist you in the process, this Handbook offers ideas and suggestions derived from several sources. We gratefully acknowledge the Center for Teaching and Learning at Stanford University; the

Harvard-Danforth Center for Teaching and Learning; the Teaching Resource Center at the University of California, Davis; the Center for Faculty Evaluation and development at Kansas State University; and the Michigan State University Educational Development Program for assistance in reviewing the content of their publications and for permission to reproduce materials which are identified in the body of this Handbook. Thanks to Dr. Stephen Thompson from the Department of Chemistry at Colorado State for his valuable contribution on teaching laboratories.

Additionally, the Office of Instructional Services wishes to acknowledge the many efforts of the faculty at Colorado State University who, over the years, have contributed immeasurably to the various activities of the office associated with advancing our knowledge of teaching and learning. Faculty participation in the yearly Professional Development Institute, the Seminar on College Teaching (GS 792), semester and year-long workshops, the monthly "Let's Talk Teaching (LT^2) Forum", has contributed significantly to a campus environment where teaching is valued and rewarded. This Handbook addresses some of the major factors which can contribute to your success as a Graduate Teaching assistant.

In particular, Dr. Kay U. Herr, Associate Director of the Office of Instructional Services, is also to be thanked for her editorial assistance and suggestions for the Handbook.

And last, but not least, thanks to Lisa McCann and Vicki Gillis for their able assistance in preparing the handbook for publication.

GUIDELINES ON TEACHING RESPONSIBILITY

The Academic Faculty and Administrative Professional Staff Manual of Colorado State University has a section devoted to Guidelines on Teaching Responsibility (E.2.3.), page E-1 (8/83), which reads as follows:

> The teaching responsibilities of the faculty are among those many areas of university life which have, for generations, been a part of the unwritten code of a "community of scholars." It seems appropriate to set forth these responsibilities in the form of illustrative statements of desirable practice. These guidelines are by no means exhaustive regarding faculty responsibilities to teaching and learning. The performance of the faculty in meeting the expectations contained in the guidelines shall be taken into consideration in determining salary increases, tenure, and promotion.
>
> a. Faculty members are responsible for stating clearly the instructional objectives of each course they teach at the beginning of each term. It is expected that faculty will direct their instruction toward the fulfillment of these objectives and that evaluation of student achievement will be consistent with these objectives. Faculty members are responsible for orienting the content of the courses to the published official course descriptions.
>
> b. Faculty members are responsible for informing

students of the methods to be employed in determining the final course grade and of any special requirements of attendance which differ from the attendance policy of the university,

c. The faculty member is responsible for the assignment of the final course grade. The assigned grade should reflect the performance of the student in the course commensurate with the objectives of the course.

d. Graded examinations, papers, and other sources of evaluation will be available to the student for inspection and discussion. These should be graded promptly to make the results a part of the student's learning experience. The results of these evaluations will be retained for at least one term to provide the opportunity for review.

e. Faculty members are expected to meet their classes regularly and at scheduled times. In case of illness or emergency, the department head should be notified promptly.

f. Faculty members are expected to make time available for student conferences. Office hours should be convenient to both students and instructor with the opportunity provided for prearranged appointments. Available conference time should be communicated to students.

g. Faculty members are expected to have their

teaching periodically evaluated by self, student, or peer evaluation.

CHARACTERISTICS RELATED TO EFFECTIVE TEACHING AND LEARNING

A discussion of effective teaching behavior is inextricably related to desirable outcomes of instruction. In a sense, any approach to teaching which realizes meaningful course objectives could be described as effective. But where should you focus your efforts? This is an important question in considering what you can do to facilitate student learning.

Inquiry on the subject of effective teaching behavior has revealed consensus on desirable practices related to student learning and positive attitudes about their learning. If there is an axiom in the field of college teaching, it certainly includes the notion that there is no magical formula for what to do in the classroom. What you do is less important than how well you do what you do. What might be described as traditional teaching, executed well, can be effective. The most creative or innovative approach to instruction, carried out ineffectively, can result in failure. So where does that lead us on the issue of teaching behaviors? When asked to describe effective teaching behaviors which lead to desirable outcomes, diverse populations selected from the college environment share a common perspective. The following behaviors are among those qualities cited as central to effective teaching and learning:

* Enthusiasm. The most frequently mentioned behavior, enthusiasm, is related to student perceptions of effective teaching and learning. The college teacher who exhibits an excitement about teaching and an

interest in students is more likely to ignite that spark of genuine curiosity present in most people. Enthusiasm is demonstrated in various ways, reflecting individual personality. What comes across unambiguously, irrespective of individual style, is a deep involvement in one's discipline as a primary motivating force for being. Enthusiasm, honestly expressed, becomes almost contagious.

* Knowledge of subject. It goes without saying that thorough mastery of a subject is essential in teaching. Formal study for an advanced degree is usually a good start in meeting this criterion, and it is necessary to be fully up to date with the most recent developments and research. Also very valuable is an integration of knowledge across disciplinary boundaries. Rather than seeing the world through one set of prisms, the effective teacher synthesizes knowledge in an eclectic fashion and uncovers relationships from a variety of perspectives. The broader the base of integration, the greater the potential for reaching more students in a given course.

* Organization and preparation. Especially important with undergraduates, this quality tends to reduce anxiety about the student's role in learning. A well-prepared course syllabus, written course objectives, outlines of class presentations, examination schedules, course policies specified in advance, are illustrative examples. Organization and

advance preparation facilitate communication between student and teacher and provide a sharper focus on where the course fits into the student's curriculum.

* Sensitivity to Student Needs. Each student has his or her own reasons for attending college, enrolling in a given class, and majoring in a particular discipline. Students vary considerably in ability, motivation, age, experience and preparation. This diversity requires that we reach out to serve their individual and corporate needs. This is not always easy to do. But we should strive to become cognizant of the fact that a "class" is comprised of individuals deserving of our best efforts to help them learn and grow intellectually. To achieve this we must sometimes be willing to modify our preestablished plan and go in the direction where combined inclinations take us. We should try to read students' reactions and expressions and never be afraid to admit that we are not infallible. For example, there are times, when students do miss class assignments or examinations for good reason. We should hear them out and use our best judgment in dealing with the many problems they confront.

* Fairness. We should treat all students the same. For example, we should not show favor for majors or give greater consideration to the more able. If a given student has requested special consideration and we grant it, we must be prepared to give all others

similar consideration under similar circumstances. The principle is straight forward. It is easy, however, to fall into an attitude where special interests take precedence without realizing the consequences for all students.

* Openness. Granted we know more about our discipline than our students. That's why we are teaching and we learn together. Each student deserves the respect granted to all who seek knowledge and truth. When a student expresses disagreement with what we present, they should be accorded the respect and dignity we would extend to our colleagues. We should hear them out and be open to other ways of perceiving a relationship, always insistent upon defense of a position with appropriate evidence. The freedom to learn occurs in an atmosphere of openness and acceptance of diversity.

* Appropriate use of humor. By humor we do not mean telling jokes. For those who feel comfortable employing humor, it can be an effective device for reducing anxiety and creating an atmosphere of mutual acceptance. The most effective use of humor in the classroom is the unrehearsed variety -- the situation, unplanned, which just happens, sometimes making you look foolish. Capitalizing upon this event can turn into an opportunity for everyone to enjoy a bit of levity and learning, too. There's nothing wrong with looking at the humorous side of situations. It

doesn't have to detract from the quality or rigor of your presentation. Tastefully employed it can enhance a presentation.

* Expression of values. Much of what we teach is intimately related to values. Yet we sometimes avoid integrating into our instruction a discussion of where it might fit into the scheme of things. It is not suggested that you necessarily turn your course into a forum for debate on every issue tangentially related to a given topic. Some disciplines lend themselves more to philosophical concerns than others. What is suggested here is that you not avoid issues of value when appropriate to the topic and that, when confronted by students about your position on an issue, you explain your stance to them. However, do not have the perspective of bringing them over to your side of an issue. But as a teacher, remember that you are looked to for opinions. Tell your students where you are and how you got there. It is the process of value clarification that is important for your students to know about. We should assist students to clarify their own values and to explore with them the range of alternatives and where a focus on values can lead in our discussion of a given topic. Students deserve as much. Agree or disagree, you will find they appreciate knowing your views.

* Humility. The more we learn, the more we realize how much we don't know. Your students may treat you as if

you do know everything about a given topic. When you don't know, tell them so. There should be nothing threatening about honesty. Better to admit we don't know than to bluff our way through an inadequate response, hoping that will satisfy the query. What's important about not knowing the answer is that you do something about it. When questions arise which challenge a response, you can simply say, "I don't know the answer to that, but I will investigate and report back to you." That is straight forward, honest, and about all anyone could reasonably expect. Think of it this way, you know so much more than your students that it's sort of fun to learn something together. This makes you truly human and not superficial or arrogant.

* <u>High Standards</u>. You have already come far in your education. You are able to recognize quality performance. Expect and demand it from your students. Performance is somewhat relative to a given class, but your standards should be held firm. Give students something to reach for. If you expect much, you will usually get much in return. Standards should not be compromised in the interest of popularity. The important thing is that you have realistic expectations for your students and that you present a challenge to the best students and bring the others along appropriately. Students may complain, but most would rather "earn" a "C" in a course with rigorous

standards than receive an "A" with very little challenge.

ADVANCED PLANNING

There is no substitute for advanced planning. Whether you are assigned to lecture or to conduct a discussion section or a laboratory, planning is essential. If you have the responsibility for selecting course materials, review what is available with enough time to meet ordering deadlines. If course materials have been selected for you, allow sufficient time to familiarize yourself with them in detail. If this is your first semester as a teaching assistant, talk to others who have been through the experience and have them brief you on what you can expect. Coordinating the distribution of topics, examinations, and other assignments with the semester schedule is essential in order to satisfy the established course goals and objectives.

Teaching a college-level course, either in part or in its entirety, requires an examination of the overall perspective of where course content fits into the student scheme of things. There are general and specific details to which you must attend. In general terms, you should consider where the course content is structured within the curriculum. Is the course a prerequisite to other courses? Is the course a required general education offering, elected from other cluster courses within a larger domain of knowledge? What reputation does the content area have on campus? Is the course considered one of those "ports of passage" through which all students must pass to prove their worthiness as college material? In a word, each and every course has its own

identity and student perception. It is your responsibility to help clear up any ambiguity about your course and to provide the appropriate perspective about its place in the life of student academic goals.

All this requires extensive planning. Recalling your undergraduate days, it is a good idea to reflect upon your experience as a guide to asking appropriate questions about course planning. The following are suggested for consideration in planning your teaching activities for any given term:

* What academic preparation is necessary for students to profit maximally from your instruction? Do they have the necessary prerequisites? One way to find out is to ask them to fill out a student information form containing pertinent questions about their background and reason for taking the course. This procedure will help form a student class profile, which can be used as a guide for your instructional strategies. It is also helpful to know something about each student which can be of great benefit in the process of working with those who may experience difficulty later in the term or in assisting the very able student with appropriate assignments to challenge their potential and more adequately meet their expectations.
* Where will you be teaching? Check out the room in advance to see that it has what you need to carry out your planned activities. Check on such things as seating flexibility and any rearrangement

possibilities which you might want to employ. Does the room have all the necessary audio/visual or computer resources which you might need. If not, try to arrange a change through your departmental secretary.

* One result of advanced planning is a course syllabus. Just as it is important for you to know where you are going and where you expect to end up at the end of the academic term, students should know as well. The entire plan for a course should be in writing in the form of a course syllabus and distributed on the first day of class. The syllabus contains your academic policies and general ground rules for conducting the class. The "Guidelines on Teaching Responsibility" cited in The Academic Faculty and Administrative Professional Staff Manual (section E.2.3.) provide a structure to consider. Course syllabi should contain, at the very minimum, the following:
  - a statement of course goals and objectives
  - any aspect of the class schedule which did not appear in the course description (for example, some courses require examinations outside of the regular class meeting time)
  - examination schedule and grading procedures
  - make-up examination policy and procedures
  - expectations you have for students and what they can expect from you
  - attendance policies

- a time schedule for topics presented and assignments for each topic
- list of required and optional reading materials, laboratory and/or study assistance needed
- deadlines for assigned work with specific dates and consequences (if any) of not meeting them
- your name, office location, phone number and scheduled office hours

You should consider other information pertinent to the course for inclusion in your syllabus. Some instructors like to make suggestions for how to study efficiently. Some distribute suggestions on taking examinations. Others provide references for additional help in writing, computer keyboard and where to locate visual support materials, as examples.

A course syllabus keeps both you and the student on schedule and constitutes the basis of agreement between you. When disputes arise (and they sometimes do), they usually originate from a misunderstanding about expectations which a well-written course syllabus can avoid.

The first day of class is perhaps the most important day.

- Start out by introducing yourself. Tell the students something about yourself: Your educational background, your interest in the discipline, your commitment to teaching, what you intend to do when you finish your degree, what excited you about the subject, something about your educational philosophy and values, and a few personal things which you feel comfortable in

mentioning. (For example: maybe you are a musician, an artist, an athlete, a traveler, an inventor, etc.) Students like to know something about you which goes beyond the classroom and subject matter. It also provides a basis to inquire about them when you have the opportunity to do so. Remember, you don't introduce yourself as "just a graduate student." You have already achieved much in your career, or you wouldn't be asked to teach a college level course. A graduate degree, to an undergraduate student, is quite an achievement and, therefore, you should not devalue your current position as "just" anything. If you have taught as a Graduate Teaching Assistant or as a Fellow, let the students know that you have experience as a college teacher.

- Reviewing the course syllabus with your students is useful to clarify specific points about how you intend to conduct the course. Although it may perhaps seem redundant to repeat what is already in a syllabus, it doesn't hurt to emphasize these matters with enthusiasm and appropriate voice inflection.
- A cursory preview of the course content can provide a cognitive map on where you see the class going and your respective roles in the process. Depending on the subject matter, this brief review can be presented through visual material. Sort of

like a teaser or "preview of coming attractions." Review the text material, and tell them why you made the selections for the course. You should communicate a sense of careful planning and enthusiasm for wanting to teach the course. Nothing could be worse than to have an instructor come in on the first day and confess that he or she really didn't know they were to teach the course until very recently (perhaps a day or two notice) and that they were not really all that interested and prepared to teach in the particular area. Perhaps you have experienced something similar. We are suggesting just the opposite approach. Convey a sense of excitement, confidence, knowledge of the subject, and enthusiasm for teaching and student interaction.

- Devote some time during the first day to course content. Start out by demonstrating that the class atmosphere will be serious and their time in class will be well spent.

Don't forget to follow-up on all administrative details associated with registration and enrollment. Students do drop and add during the first few days. It is necessary that those who enroll late know what is expected of them and that they are responsible for understanding what is contained in the course syllabus and what has transpired prior to their late registration or absence. It is nice to be liked by your students and to project a genuine concern for their general

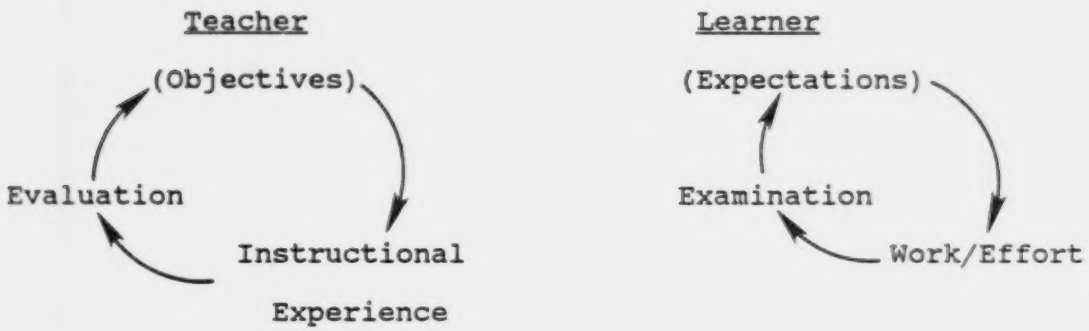
welfare, but place responsibility on them for knowing what you expect from students and what they can expect from you.

Plan on giving attention to learning as many student names as possible throughout the term. Establishing good communication starts with knowing people by name and being able to relate to them on a personal basis. You should have as many students as you have time to see come in for short visits which communicates the fact that you are interested in them. This is one way to assure they will find out where your office is and will know you are available to them for assistance.

Give the students helpful suggestions on how to study for the course. Relate how you learned how to learn the content when you were an undergraduate. We oftentimes assume that the only necessary conditions for students to learn are listening to what we have to say and reading their assignments. These may be necessary conditions, but not always sufficient. Pass on whatever hints or strategies helped you learn when you were at their developmental level. Keep in mind that perhaps the most useful thing an undergraduate can learn is to become an independent, life-long learner. In order for this to occur we must assist them in <u>learning how to learn</u>. Go through the motions with them by working with problems and questions and have them not only observe your strategies of inquiry but participate along with you as you work through alternatives and solutions. Help them see how they can make their learning active and participate with each other in the process.

A TEACHER - LEARNER PARADIGM

The teaching/learning process represents a delicate and sometimes subtle relationship of responsibilities between student and teacher. The relationship can be viewed from various perspectives. The essence of instructional models which describe the respective responsibilities of teacher/learner have their origin in the relative degree to which the process is instructor-directed or instructor-learner collaboration. The degree to which the teacher and learner share responsibilities for establishing course objectives can influence desired outcomes. Given the current structure of American universities where emphasis is placed on courses, credits, majors, minors, concentrations and ultimately degrees--all contained within the context of a fifty-minute class period with quarters or semesters--instructional models seem appropriate. For example, the paradigm below presents a way of looking at key elements in the process and their respective relationships:



In this particular example, the teacher establishes course objectives in terms of specific behaviors which describe what a student should be able to do as a result of instruction. (See next section on Formulating Instructional Objectives.) If the objectives are stated in unambiguous behavioral terms which can be measured, it should be possible to design appropriate instructional experiences which facilitate desired outcomes. This can be established by means of evaluations (examinations) which follow directly from the stated objectives. These components of instruction exist in a relationship of mutual integrity.

On the learner's side of the model we have the student who has a particular set of expectations. These are often acquired from unsystematic sources prior to the first day of class. If, however, the course syllabus clearly establishes the course plan which includes objectives, organized instructional experiences, and evaluation, standards and procedures, life can be more pleasant for everyone. The student will know what to expect, how much work or effort is required, and what kind of examinations to prepare for. Once again, there is integrity in the model.

Students who experience difficulty in particular courses often point to a situation which represents a breakdown in the integrity of the teacher/learner components of this model. Although not a panacea, this particular orientation seems to apply equally across various disciplines and is suggested for your consideration as a guide to instructional activities.

FORMULATING INSTRUCTIONAL OBJECTIVES

(Note: The following statement on Instructional Objectives was written by Dr. Lawrence T. Alexander, Professor of Educational Psychology, Michigan State University, East Lansing, Michigan. The statement has been adapted with permission to our environment at Colorado State University.)

Colorado State University's "Guidelines on Teaching Responsibility" begin with the statement:

> "Faculty members are responsible for stating clearly the instructional objectives of each course they teach at the beginning of each term. It is expected that faculty will direct their instruction toward the fulfillment of these objectives and that evaluation of student achievement will be consistent with these objectives."

Why are instructional objectives given so preeminent a place in these "Guidelines"? Have instructors in the past failed to tell students what they expected of them? It would be difficult for an instructor to plan and teach a course without having some objectives in mind, and most teachers probably tell students something about their goals and expectations for the course.

In our opinion, if a problem exists, it is to be found in the requirement to state objectives <u>clearly</u>. How clear is "clear"? How do instructors know whether they have stated the objectives clearly enough? We shall try to answer these questions by developing an operational definition of clear instructional objectives. First, we shall indicate some of the consequences of not stating objectives clearly and unambiguously. Second, we shall postulate three functions

that instructional objectives should perform in the teaching-learning process. Finally, we shall suggest the characteristics or properties that an instructional objective should have in order to fulfill these functions.

Symptoms of the Problem

A recent Peanuts cartoon illustrates what can happen if instructional objectives are not stated clearly.

Lucy: What did you write for question number 5?

Linus: I said that he was one of our greatest presidents and one of our most beloved leaders.

Lucy: Do you really believe that?

Linus: No, but I've learned never to bad mouth a president on a history test.

When students are not informed what is expected of them, they try to reduce their uncertainty by "psyching out" the instructor. They spend a great deal of their time trying to learn about the professor's idiosyncracies rather than learning course material.

Some other "symptoms" of poorly formulated objectives are:

1. Students complain that the course is irrelevant and that the material is not related to their personal educational goals or to any other goals that they can recognize as being important.
2. Students complain that tests are unfair: one topic is assigned; another is taught; and a third is covered on the test.
3. Students complain that they do not know what to study

since no priorities among topics are provided.

4. Students complain that the course is disorganized, that the topics do not fit together, and that there is no clear distinction made between or among potentially competing elements.

Are these complaints the outcries of stupid or lazy people? Do only poor students complain? If good students do not complain, is it because they have learned how to "beat the system"? Or are these complaints possibly the result of unclear objectives?

Functions of an Instructional Objective

An instructional objective is a statement of an instructional goal. In the teaching-learning process an instructional objective should perform three functions: (1) guide the instructor in planning the instruction so as to achieve the goal; (2) guide student learning toward the goal; and (3) provide a criterion for evaluating student achievement of the goal.

An instructional objective guides instructional planning in the same way that knowledge of the destination aids the traveler in selecting a route. Just as the traveler uses a destination as the criterion for deciding among alternative routes, an objective should provide a clear criterion for deciding among alternative instructional procedures. For example, an objective that specifies the kind of learning required of a student helps the instructor to select and arrange the conditions that will facilitate that learning.

An instructional objective assists students by providing

them a "target to shoot at." Most instructors agree that students should assume some degree of responsibility for their own learning. However, if students are to discharge this responsibility, they must be given adequate guidelines. An objective should specify a learning goal so clearly that a student can use it to allocate study time efficiently, evaluate progress toward the goal, and determine when the goal has been achieved to the required level or proficiency.

An instructional objective provides a criterion for evaluating student achievement by specifying unambiguously how students will be required to demonstrate what they have learned.

Properties of a Clearly Stated Objective

We have suggested that an instructional objective should be stated clearly enough so that:

1. An instructor can employ it to help make decisions in planning the instruction.
2. A student can employ it to guide the learning activities.
3. It can serve as an unambiguous criterion for evaluating student achievement.

Studies of the teaching-learning process indicate that, in order to fulfill the functions stated above, an instructional objective should have the following properties.

It should include a description of:

1. Behavior expected of the student after instruction.
2. Test conditions under which the student will be required to demonstrate the behavior.
3. Standards of minimally acceptable performance.

Behavior

An objective is a statement of an instructional outcome. When an instructor states an objective in terms of the behavior expected of a student, it provides an unambiguous description of what the outcome of instruction is intended to be. By "behavior" we mean any response that can be observed or measured.

In the following examples, the underlined words clearly describe student behavior:

Identify positive and negative examples of participative management.

Given an hypothesis derived from the principles of operant conditioning, the student will be able to design an experiment that . . .

From several examples of French impressionist art, the student will be able to select those that exemplify . .

In contrast, consider the following statements of instructional outcomes:

Appreciates the value of democracy.

Grasps the significance of the concept of supply and demand.

Fully appreciates the importance of instructional objectives.

Becomes familiar with the plays of Shakespeare.

Understands (or really understands) scientific methods.

The underlined words are so vague as to be almost meaningless. They can be interpreted in a variety of ways and, thus, do not meet the needs of the student who requires a more precise statement of expectations. Such words as discriminate (or distinguish between), choose (or select), identify, solve, apply, or list (the properties of) are less ambiguous. They state what the student will be doing to demonstrate that he has learned.

A good test of whether or not an objective clearly communicates an instructional outcome is an affirmative answer to the question:

> Could two qualified, independent observers, with the objective before them, observe a student performing the specified behavior and agree whether or not the statement and the performance correspond?

There is another advantage to writing instructional objectives in behavioral terms. It enables the instructor to demonstrate to oneself, and to the students, that learning has occurred. It is difficult to demonstrate learning unless there is a resultant change in behavior that can be observed or measured.

Test Conditions and Standards

In order to make your instructional intent even more clear, an objective should include, in addition to the behavior expected of the students, the test conditions under which they will be required to demonstrate the behavior and the standards of minimally acceptable performance.

For example, consider this objective: The student should be able to write an essay critically evaluating current beliefs about contraception.

It is not clear from this statement what the instructor would accept as a critical evaluation. If you were going to grade the essay, or as a student in the class you were preparing yourself to write one, you would certainly want a more precise description of what was expected.

In contrast, the following objective is more precise: Students should be able to write an essay stating at least five currently held beliefs about contraceptive devices. Each belief should then be restated as a physiological principle that includes independent and dependent variables and the relationship between them. Physiological evidence should be cited that either supports or denies the validity of the principle.

If a student had been given the latter objective, there would be little difficulty understanding what the instructor expected.

Here are two examples of objectives that include the properties stated above:

1. The student will be given a copy of several political campaign speeches that include the following types of logical errors (types named). The student should be able to identify at least two examples of each type of error, identify the type by name, and write the statements in syllogistic form according to the procedures specified in the text.

2. The student (a graduate teaching assistant) will be given several written examples of typical instructional problems. The student will correctly identify all examples that illustrate operant behavior and, choosing one, will write a plan for modifying that behavior. The plan must include the following operations: measurement of operant level, identification of reinforcing stimulus, and management of a contingency schedule.

The ideas expressed here are not new. Most scholarly and research endeavors begin with a precise statement of a goal. The goal statement guides subsequent planning and implementation and serves as a criterion for evaluating the completed project.

Those interested in learning more about the subject may want to consider enrolling in the seminar on College Teaching (GS 792) offered each semester through the Graduate School. Contact either Dr. Frank Vattano (491-0988) or Dr. Jack Avens (491-6579).

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Division of Continuing Education
Kansas State University

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Improving Lectures

by
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"Given the recent invention of the printing press, why do college professors continue to lecture so much?"
Anonymous

The question is not trivial. The lecture approach may be the most widely used teaching approach in U.S. higher education. Looking at data from 6307 classes that used IDEA in the late 1970s, 24% were listed as "Lecture," 27% as "Lecture and Discussion," and 20% as "Lecture with Lab."

There are faculty who are convinced that lecturing is the most appropriate teaching approach in almost every case. There are others who are equally convinced that lecturing is almost never appropriate. The position of this paper is that it is impossible to decide upon an effective teaching approach without first deciding upon your instructional goals. Lecturing is very appropriate for some goals, and very inappropriate for others.

Every reader undoubtedly has an idea of what is meant by a "lecture," and dictionary definitions do not shed much additional light: lecture—an exposition on a given subject delivered before an audience or class for the purpose of instruction, or a method of teaching by discourse as opposed to conversation or seminar. Etiomologically, to lecture means to read. In the medieval universities the professor did read from his notes because those were the only "books" available.

Unless otherwise stated in this paper, "lecture" will focus teaching by the spoken word with emphasis on one-way communication; the teacher talks, and (hopefully) the students listen, recognizing that most courses listed as lecture in college catalogs involve some two-way communication, question and answer and the like; a practice we heartily approve.

Strengths of the Lecture Approach

The obvious answer to the question of why we continue to lecture so much is that lecturing continues to be useful in achieving a number of instructional goals.

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Walker and McKeachie (1967) argue that the lecture approach had two unique strengths: it can communicate the intrinsic interest of the subject matter, and it can present the newest developments. Other authors have listed other goals which, although they may not be unique to lecturing, are well served by that approach.

1. Lectures can communicate the **intrinsic interest** of the subject matter. Like live theatre, lectures can convey the speaker's enthusiasm in a way that no book or other media can. Enthusiasm stimulates interest and interested, stimulated people tend to learn more.

2. Lectures can cover material **not otherwise available.** This includes original research, or recent developments which may only be available from papers or articles not yet included in textbooks.

3. Lectures can **organize material in a special way.** Lectures may be a faster, simpler method of presenting materials fitted to the needs or interests of a particular audience.

4. Lectures can convey large amounts of **information.** Lectures are probably most often used to cover facts, generalizations, and the like. This was the original purpose of the lecture before the invention of the printing press. Lectures continue to be useful to convey information that is not available in print. When the material is otherwise available, e.g., in textbooks or programmed texts, you should consider whether lecturing on the material is desirable. It very well may be if, for example, the students are not motivated enough to study the material on their own, or they lack the required reading skills.

5. Lectures can communicate to **many listeners** at the same time. With the proper audiovisual support, a skilled lecturer can communicate effectively with a few hundred (or even a few thousand) listeners. (Unskilled lecturers should not try to lecture to groups of any size.)

6. Lecturers can **model** how professionals in a particular discipline approach a question or problem. This modeling behavior is one of the major characteristics of the instructor-centered teacher described by Axelrod (1976).

The audience can watch firsthand as the lecturer "thinks" like professionals in the field.

7. Lectures permit **maximum teacher control.** From the teachers' point of view this can be an advantage. The instructor chooses what material to cover, whether to answer questions, etc.

8. Lectures present **minimum threat to the student.** Students are not required to do anything. From the students' point of view this may be an advantage.

9. Lectures emphasize **learning by listening.** This is an advantage for students who learn well this way, which may increasingly be the case for students raised on television viewing.

Weaknesses of the Lecture Approach

The lecture approach has a number of strengths; unfortunately, it also has a number of weaknesses. Both must be taken into consideration when you are deciding whether giving a lecture is appropriate for a particular part of your course.

1. Lectures **lack feedback** to the instructor about the students' learning; ". . . in the long run, it is what the learner does rather than what the teacher does that really counts in teaching." (Dressel & Marcus, 1982, p. xix.) The major drawback of a strict lecture approach is that it does not provide the lecturer with any systematic information about whether and what the students are learning or not learning. Granted, there are a lot of nonverbal cues available if you look around.

2. In lectures, the **students are passive;** at least they are more passive than the lecturer. The more active the learner, the more learning is likely to take place.

3. Students' **attention wanes** quickly, in 15 or 25 minutes according to studies (Bligh, 1972).

4. Information learned in lectures tends to be **forgotten quickly.** This general statement depends considerably on how passive the students are. Students who simply listen to a lecture will tend to forget the material more quickly than students who listen and take notes, who in turn will remember less than students who take notes and are involved in some kind of question/answer session, etc. The more active the student, and the more senses involved in the learning, the more he or she is likely to remember more material, and for a longer time.

5. Lectures presume that all students are learning at the **same pace and level of understanding.** Of course, this is hardly ever true. Unlike written passages that can be reread, or tapes that can be rewound, lectures proceed at a pace determined by the lecturer, not the individual student.

6. Lectures are **not well suited to higher levels of learning:** application, analysis, synthesis, influencing attitudes or values, developing motor skills. Lecturing is best suited to the lower levels of knowledge and understanding. If you want students to think critically or to write well, you need to do something other than lecture.

7. Lectures are **not well suited to complex, detailed, or abstract material.** The more difficult the material becomes, the more individual differences among the students are going to influence the pace and level of the students' learning. Therefore, self-paced and/or two-way communication teaching approaches become preferable to lecturing.

8. Lectures require an **effective speaker.** The lecturer must be loud enough to be heard; and also must vary pitch, tone of voice, and pace of delivery. Lecturers must be verbally fluent. These skills are not typically stressed in Ph.D. programs, the terminal degree for college teachers.

9. Lectures emphasize **learning by listening,** which is a disadvantage for students who prefer to learn by reading, or by doing, or some other mode.

Recommendations

This part attempts to summarize the recommendations about improving lectures made by several of the authors listed in the Further Readings section at the end of this paper. Citations will only be given where a specific author has something to recommend not included by other authors.

Preparation and Organization

These recommendations concern what should be done when the lecture is being planned, before you enter the classroom.

1. **Fit lecture to your audience.** Try to make the lecture relevant to your audience and, therefore, more interesting. This means that you will have to gather some information about your listeners beforehand.

2. **Select topic.** You will never be able to cover everything. Selecting your topic will determine the focus of your lecture and provide a context within which you make other decisions.

3. **Prepare an outline.** Some people suggest five to nine major points. If you attempt to cover too much, your audience will actually learn and also remember less. The object of a lecture is not just to cover the material, but to have the listeners learn.

4. **Organize your points.** This can be done in a number of ways, for example, chronologically, causally, in ascending or descending order, spatially, or by presenting a problem and then possible solutions. (See Day, 1980, for some alternative ways to organize your lecture notes.)

5. **Decide upon minor points,** or the points you wish to include under each major point.

6. **Select examples.** Almost all writers agree that illustrations, etc., help people both to understand and to remember.

7. **Present more than one side** of an issue. You must do this if you wish to convince your listeners of the validity of a given position—if that is one of your purposes—unless your audience is completely naive and incapable of thinking of any counter arguments. You should do it simply to help them understand various implications of an issue.

Presentation and Clarity

This section and the next, concern two different aspects of lecturing while you are actually in the classroom.

8. **Speak clearly and loud enough to be heard.** Seems obvious but I suspect that we have all sinned against this prescription. Perhaps in the very first class you should suggest that people signal you if they cannot hear, e.g., cup a hand behind their ear.

9. **Avoid distracting mannerisms,** verbal tics like "ah" or "you know," straightening your notes or tie or beads.

10. **Provide an introduction.** Begin with a concise statement, something that will preview the lecture. Give the listeners a set or frame of reference for the remainder of your presentation. Refer to previous lectures. Attract and focus their attention.

11. **Present an outline.** Write it on the chalkboard, or use an overhead transparency, or a handout. Then be sure that you refer to it as you move from point to point in your lecture.

12. **Emphasize principles and generalizations.** Research suggests that these are what people really remember—and they are probably what you really want to teach.

13. **Repeat your points** in two or three different ways. Your listeners may not have heard it the first time, or understood it, or had time to write it down. Include examples or concrete ideas. These help both understanding and remembering. Use short sentences.

14. **Stress important points.** This can be done by how you say it. It can also be done explicitly, e.g., "Write this down"; "This is important"; "This will be on the test." If you are modeling thinking, point out the thought processes as you go along.

15. **Pause.** Give your listeners time to think, and to write.

Stimulation and Interest

The previous section made some recommendations that dealt with cognitive aspects of your classroom presentation, this section deals with affective aspects.

16. **Use effective speech techniques.** Talk, do not read your lecture. Vary your inflection, gestures, position, pace of lecture, etc.

17. **Be enthusiastic.** If you do not think the material is worth learning, why should the students? If you do think so, communicate that.

18. **Start with a question, problem, or controversy.** Very early in the lecture you need something that will catch the listeners' attention, something to stir their interest. There is nothing wrong with being dramatic as long as you also have content. No matter how profound your content, the students won't learn anything from you if they are half asleep.

19. **Be relevant.** Use materials and examples that the students can relate to, things from their previous learning or experience, things from "real life."

20. **Use AV.** Models, films, recordings, etc., make a lecture more vivid and immediate, they also provide variety. Demonstrations and experiments serve the same purpose.

21. **Use humor.** Almost every writer agrees that a certain amount of humor or personal anecdotes enhances a lecture. There are two cautions: first, the humor should not be at the expense of the students or offend the reasonable sensibilities of any group; second, avoid egotrips.

22. **Provide change.** Research suggests that most people's attention wanes after 15-25 minutes. I suggest that you introduce some kind of change about every 15 minutes. This does not mean ending your lecturing. It could simply be stopping for questions, or putting a transparency on the overhead, or moving to a different part of the room, but do something different.

Feedback and Interaction

Strictly speaking this is not part of a lecture defined as one-way communication. But none of the writers recommend that kind of lecture and very, very few college lecture courses are that restricted.

23. **Look at your listeners.** Most audiences provide a multitude of nonverbal clues about whether they are paying attention, whether they understand, and whether they agree.

24. **Solicit questions.** Even if all you do is occasionally pause, look around, and ask if there are any questions, you will have significantly added to the effectiveness of your lecture. It will give you some feedback from the students.

25. **Use discussion techniques.** There are a number of group techniques that can be used, even with hundreds of listeners, to increase their involvement. Several years ago some institutions had large lecture halls wired so that the instructor could put a multiple-choice question on the screen and the students could punch in their answers. The same thing can be accomplished by giving the students sets of five different colored index cards to hold up for their answers: red for option "1," yellow for "2," etc. You can call on a student who chose the correct answer (color) and have him or her explain why; or call on a student who chose an alternative that contained a common misconception. Interactions like this achieve two things. First, they actively involve the students' thinking about the material; and second, they give you feedback about what the students are learning.

26. **Use praise.** In your give-and-take with students, make positive comments when they are warranted; doing so increases learning.

27. **Use a lecture committee.** This is something McKeachie (1978) uses in large general psychology classes. Basically, it is a committee of students which meets with the instructor periodically to provide student feedback about how the course is progressing and to react to ideas for future classes.

Conclusion

This paper has attempted to summarize much of what has been written about improving lecturing. Readers should be aware that, although there are empirical data supporting some of the recommendations made in this paper, most of the research is such that it would not compel belief. No case is being made that you must do these things to lecture effectively. Rather, these are some suggestions you might consider. If they are of help, fine; if not, try something else.

Lecturing is appropriate for many of the instructional goals of college-level classes. Lecturing is a craft, that is, a learnable skill. These suggestions will not ensure greatness, but for about 99% of us, they are steps in the right direction.

References

Axelrod, J. (1976). **The university teacher as artist.** San Francisco: Jossey-Bass.

Bligh, D. A. **What's the use of lectures?** Harmondsworth, Middlesex, England: Penguin Books.

Day, R. S. (1980) Teaching from notes: Some cognitive consequences. In W. J. McKeachie (Ed.), **Learning, cognition, and college teaching: New directions for teaching and learning,** No. 2. San Francisco: Jossey-Bass. Pages 95-112.

Dressel, P. L., & Marcus, D. (1982). **On teaching and learning in college.** San Francisco: Jossey-Bass.

McKeachie, W. J. (1978). **Teaching tips: A guidebook for the beginning teacher.** (7th ed.) Lexington, MA: D. C. Heath. Pages 22-34.

Walker, E. L., & McKeachie, W. J. (1976). **Some thoughts about teaching the beginning course in psychology.** Belmont, CA: Brooks/Cole Publishing Company.

Further Readings

All of the readings included in this list are recommended. However, as a help to the reader, there are two asterisks (**) following the reading recommended as first choice, and (*) for second choices.

Bligh, D., Ebrahim, G. J., Jacques, D., & Piper, D. W. (1975). **Teaching students.** Devon, England: Exeter University Teaching Services. Pages 101-108.

Brock, S. C. **Aspects of lecturing** (1977). Manhattan, KS: Kansas State University, Center for Faculty Evaluation and Development. 17 pages.

Cashin, W. E., Brock, S. D., & Owens, R. E. (1976). **Answering and asking questions.** Manhattan, KS: Kansas State University, Center for Faculty Evaluation and Development. 17 pages.

Davis, R. H., & Alexander, L. T. (1977). **The lecture method: Guides for the improvement of instruction in higher education,** No. 5. East Lansing: Michigan State University. 18 pages.

Day, R. S. (1980). Teaching from notes: Some cognitive consequences. In W. J. McKeachie (Ed.), **Learning, cognition, and college teaching: New directions for teaching and learning,** No. 2. San Francisco: Jossey-Bass. Pages 95-112.*

Eble, K. E. (1976). **The craft of teaching.** San Francisco: Jossey-Bass. Pages 42-53.**

Fuhrmann, B. S., & Grasha, A. F. (1983). **A practical handbook for college teachers.** Boston: Little, Brown. Pages 52-63.

Hyman, R. T. (1974). **Ways of teaching.** (2nd edition) Philadelphia: J. B. Lippincott. Pages 208-230.

Lowman, J. (1984). **Mastering the techniques of teaching.** San Francisco: Jossey-Bass. Pages 96-118.

McKeachie, W. J. (1978). **Teaching tips: A guidebook for the beginning teacher.** (7th ed.) Lexington, MA: D. C. Heath. Pages 22-34.*

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Kansas State University

IDEA PAPER No. 15

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Improving Discussions

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"I have come to feel that the only learning which significantly influences behavior is self-discovered, self-appropriated learning." Rogers (1969, p. 153)

Although such learning can take place during a lecture, it is more likely to occur in discussion classes where there is give and take. Everybody knows what a discussion is, but try to find a good definition or description. In this paper we will use "discussion" to include a variety of teaching approaches which focus on two-way, spoken communication between the teacher and the students, and more importantly among the students themselves, for example, recitation, dialogue, and guided and pure discussions.

Strengths of Discussion Approaches

As was suggested in the previous IDEA Paper on improving lectures (Cashin, 1985), what constitutes effective teaching, that is, what best fosters learning, depends upon your instructional goals. Discussion approaches are well suited to a variety of course goals.

1. Discussions provide the instructor with **feedback about student learning.** A major limitation of lectures (one-way communication) is the lack of information about what the students are learning. Discussions overcome this by using both instructor and student questions, student comments, elaborations, justifications, etc. These interactions allow the instructor to plumb the depths of the students' understanding.

2. Discussions are appropriate for higher-order cognitive objectives: **application, analysis, synthesis, evaluation** (Bloom et al, 1956; Gronlund, 1978). Discussions permit and encourage the student to introduce, explore, and refine ideas in ways which are impossible in a lecture.

3. Discussions are appropriate for affective objectives: to **help students develop interests and values, to change attitudes** (Krathwohl et al, 1964; Gronlund, 1978). Discussions can do more than change minds; they can change hearts, the way we feel about an issue and our appreciation of it.

4. Discussions allow students to become more **active participants** in their learning. This increases their motivation to learn and makes the learning more interesting.

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Weaknesses of Discussion Approaches

Like everything in life, discussions have not only advantages, but disadvantages.

1. It may be **difficult to get student participation.** First, discussions can be **threatening to students.** In lectures the student's ignorance can go undiscovered. To participate in a discussion means to run the risk of both being wrong and being found out. Also, there may be **peer pressure not to excel.** There are still students who prefer the "gentleman's (or gentlewoman's) C." Further, in some cultures it is considered inappropriate for the individual to stand out, for example, in some Asian countries and some Native American tribes. Other subcultures do not place a high value on intellectual achievement in general.

2. Discussions are **more time consuming.** The pace seems slower, not much may appear to be happening.

3. Discussions are **not well suited to covering significant amounts of content.** As instructors, we must wrestle with the issue of how much of the content we cover versus the depth of the students' learning.

4. Effective discussions require **more forethought** than do lectures. They are not opportunities for the instructor to take a break. Yet preparation cannot ensure that the discussion will follow the anticipated direction. After a few bad experiences, the instructor may take refuge in a more predictable method—lecturing.

5. In discussions the instructor has **less control.** To some extent we must go where the students' questions and interests take the group. We must allow the students to speak.

Recommendations

This part of the paper will summarize recommendations regarding three aspects of discussions: improving cognitive or intellectual learning, improving the affective or interest/value aspects of learning, and increasing participation. The authors included in the Further Readings section at the end of this paper treat most of these topics. Individual authors will only be cited where their treatment seems to be of special interest.

Cognitive Aspects

1. **Define the topic.** The topic for discussion should be relatively clear, that is, limited enough to focus the students' attention. "Real" or relevant issues rather than abstract or academic ones are more likely to engage the students. It is desirable to give students the topic a class or two before the discussion so that they may prepare. Often assigned readings and study questions help.

2. **The instructor must be prepared.** It is our contention that an effective discussion requires much more preparation than an effective lecture. In a lecture the instructor can decide what he or she will cover. In a discussion you should be prepared to explore any issue reasonably related to the discussion topic. This means you must know the topic very well. It is advisable to list possible issues or questions which the students might bring up and to outline possible answers or responses and if necessary, do some more reading or studying yourself.

3. **Use a common experience.** Discussions are likely to be more focused and therefore more productive if they deal with something the students have all experienced. Choosing something from the students' "real life" is one tactic. Providing a common experience by means of readings, a film, etc. is another. Ensure that the students have sufficient information to make the discussion productive—simply sharing ignorance is in no one's best interest. During the discussion you may have to provide additional information if lack of data is hindering or sidetracking the discussion.

4. **Acting as a facilitator is the instructor's primary role in a discussion.** Most of the content should be covered before the discussion, either in previous lectures, readings, films, or other sources, including the students' experience. The following behaviors tend to be facilitative:

a. **Listen**—attend to the points the students are trying to make, not just your points. (Attend to their feelings as well as their thoughts.)

b. **Observe**—pay attention not only to the content but to the group process, for example, who is responding to whom, and who is typically ignored by the rest of the group.

c. **Allow for pauses and silence.** Students need to be given time to think. So we must exercise that most difficult skill for college teachers, keeping quiet. This is necessary if students are to answer complex, higher order questions.

d. **Post and verify** what individuals are saying. Periodically take time to summarize or write on the chalkboard your understanding of the problems or positions, solutions or responses, being put forth by the students. Then check if your understanding is correct. When writing on the chalkboard, try to use simple phrases. Show relationships between ideas by using diagrams, etc.

e. **Request examples or illustrations.** Almost all writers agree that using examples helps people learn. The more complex or abstract the material becomes, the more helpful illustrations become.

f. **Encourage and recognize students' contributions.** Broad student participation in discussions enhances their value. Be especially alert to nonverbal clues that students who do not participate much have something to say; when they do, call on them. Occasionally comment positively on students' contribution, but do not do it every time. Otherwise, it becomes a dialogue between you and individual students rather than a discussion among the students.

g. **Test consensus.** If everyone agrees, then there will be no discussion. Beware of premature agreement. If the group seems to have reached a consensus, test this by paraphrasing your understanding of that agreement. Often only the talkers have agreed and there are still opposing positions to be explored.

h. **Provide a summary and/or conclusion.** By taking a few minutes throughout the discussion or at least at the end to summarize the main points which have been discussed, you provide the students with a sense of closure and help them remember. Making explicit any conclusions which have been reached is also very helpful if the topic will not be discussed further.

5. **Regarding questioning,** the following are some suggestions which encourage interaction among the students:

a. **Ask students for clarification** if their comments seem to you (and so probably to many others) to be incomplete or unclear.

b. **Ask students to support their opinions.** Sometimes students, especially freshmen, think it is sufficient simply to have an opinion. But in most college-level courses one's opinion is less important than the reasons behind it. You are not so much interested in what they think, as why. Make the students go beyond their initial, perhaps superficial reactions.

c. **Use open-ended questions,** that is, questions which permit the students to elaborate and think through their answer rather than just give a brief response, or a "yes" or "no." Use questions like, "What are the causes of . . . ?" or, "What is your opinion about . . . ?"

d. **Use divergent questions,** that is, questions to which there is no single, correct answer. Questions like "What were the causes of the American Revolution?" are both open-ended, and convergent—the student is likely to respond with a set of causes generally agreed upon by historians. Questions like "What is your opinion about the greenhouse effect? . . . or capital punishment?" permit the students to talk about what they think. They can explore one position without having to cover others.

e. **Rephrase questions** if students cannot respond to your first question. Your second question can help the students to focus on previous material that might be relevant, or to draw their attention to some limitation or inconsistency in a previous response, etc.

f. **Pause, give the students time to reflect** and think through their responses, especially with higher order concepts. In our culture, silence is socially awkward. You may need to train your students (and yourself) to feel comfortable with silences.

6. **Possible stages to follow.** There are many paths which a discussion might productively travel. The following is one general plan:

a. **Define the problem.** Until there is some agreement about what the problem, question, or issue is, the discussion is likely to make little progress.

b. **Have students suggest possible solutions.** Brainstorming—having the group suggest as many solutions as possible without any discussion of their feasibility—is one approach. The group should avoid criticizing or making evaluative judgments at this point.

c. **Collect relevant data** or comments from the students about the relative advantages and disadvantages of the proposed solutions. At this stage the focus is still on elaboration rather than evaluation.

d. **Evaluate the various solutions, positions, and conclusions.** Now is the time to judge, compare, weigh, and evaluate.

e. **Decide upon a solution, position, etc.** If at the end of the previous stage one position clearly is better than the other alternatives, then you are already finished. But most questions have more than one "good" answer. In such cases, the group, or the various individuals, must decide which position they choose to embrace at least for now.

Affective Aspects

Many academics tend to conceive of college as primarily, if not exclusively, an intellectual or cognitive experience. Such a conception of college ignores at least two considerations. First, individual students often bring to college feelings, interests, and values that hinder their learning or understanding of content which we may consider objective. Second, college is about values, at least values like logical thinking, clear expression, knowing the data or literature, and even appreciating the subject and being responsible for one's own work. At a more profound level, college is also about what kind of person one aspires to be, what kind of world the student wants, and what life is about. Our teaching is value-laden, and appropriately so. Discussion approaches are well suited to many of these concerns about feelings, interests, and values; hence, this section on affective aspects of discussions is included.

7. **Know your students.** Start the discussion with something relevant to the students' interests and goals, something out of their experience.

8. **Be patient.** Discussion classes take more time to get going. Therefore, be careful you do not talk too much, especially at the beginning.

9. **Be sensitive to student feelings.** Sometimes students suppress their negative feelings. But those feelings still remain an obstacle to learning. Sometimes students get into arguments (vs. discussion); this does not foster learning. Sometimes students attack the professor. Do not take it personally. You may want to get these feelings out in the open and talk about them.

10. **Challenge the students, but do not threaten them.** This can be a very difficult balance to achieve. You want to arouse the students enough to stretch themselves, but not so much that it becomes counterproductive. What makes it especially difficult is that what challenges one student may distress another. Some suggestions are:

a. **Do not question a single student for too long.** If the student cannot respond after a second, focusing question, move on to other students. Demonstrating how much an individual student does not know rarely serves a useful purpose.

b. **Use personal anecdotes.** Using your own experiences and showing that you are human can facilitate the discussion if done in moderation.

11. **Avoid premature agreement.** We have already talked about testing for consensus (4g above). You may wish to ask a student or group to argue against the apparent consensus. Or you may want to play devil's advocate—very carefully; avoid being so convincing that later some students will consider you to be intellectually dishonest. (See McKeachie, 1986, pp. 33 – 34 for an extended discussion.)

12. **Deal with conflicts,** do not ignore them. A helpful first step is to define the apparent areas of conflict. The problem may simply be cognitive misunderstanding, although often not. You may want to write the pros and cons on the chalkboard, or you may want to arrange for the two sides to debate the issue. At least in some way explicitly address the conflict.

13. **Recommended instructor behaviors are:**

a. **Be silent;** when in doubt, keep quiet. (See 5f above.)

b. **Hear the students out.** Concentrate on the points the students are trying to make more than on the points you want to make.

c. **Inquire,** ask the student to elaborate, clarify, expand, explain, explore, etc.

d. **Paraphrase** what a student has said, first, to check your understanding, and second, to show that you are listening. This is helpful behavior for the other students also.

e. **Be accepting** rather than judgmental or evaluative. Try to focus on the "correct" part of the student's response. Positive reinforcement will foster more learning than negative reinforcement. (Eventually your grading criteria will have to be taken into consideration, and they will have an important influence. See 15 below.)

Regarding Participation

The following are some suggestions about what you might do to increase student involvement and interaction in your discussions.

14. **Create the expectation of participation.** Arrange the seating so it is easy for everyone to see one another, e.g., around a table or with a circle of chairs. Make the instructor part of the group, e.g., not behind a desk, but seated in same kind of chair, etc. Help students to get to know one another, e.g., have them interview someone they do not know. Get the students to talk, e.g., have them introduce the person they interviewed. Help them learn each other's name.

15. **Clarify how participation will influence grades,** and do this **early and clearly.**

16. **Avoid always looking directly at the student speaking.** Socially we are conditioned to look at the person who is speaking. If you, as the instructor, typically do this, the students will speak to you, not the group. If Student B is responding to something Student A said, you might look at Student A. Also, look at the other students to see how they are reacting to the speaker. Use gestures and nods to direct the students' attention to other students, not to you, or simply say, "Talk to him (or her)."

17. **Control excessive talkers,** by, for example:

a. **Do not call on the "talkers" first.** Wait to see if someone else raises a hand or volunteers a comment.

b. **Solicit responses from the "nontalkers."** Be alert to nonverbal cues indicating that they have something to say and call on them: "Did you want to say something . . . ?," or "Let's hear from some of you who haven't said anything yet."

c. **Have the class observed by someone assigned as an observer,** then discuss who is talking, how often, to whom, etc. Often this will make both the "talkers" and "nontalkers" modify their behavior.

d. **Talk to the student outside of class** if all else fails.

18. **Instructor's role as group leader.** Many of the "gatekeeping" responsibilities in the group process literature are also appropriate in discussion groups.

a. **Call the class to order.**

b. **Help the group clarify its goals.** Even if the goals are primarily the instructor's, it helps to make them clear. In more flexible groups where the students have a major voice in determining the goals, such clarification becomes essential.

c. **Keep the group on track.** Sometimes this can be done by simply calling attention to the fact that the individual or group is getting off the point.

d. **Clarify and mediate differences.** (See 12 above, on dealing with conflicts.)

e. **Summarize and draw conclusions.** (See 4h above.)

Conclusions

As with the IDEA Paper on improving lectures, the recommendations in this paper are suggestions of things that may help create and maintain an effective discussion. They are not prescriptions—things that you must do. If these recommendations are helpful, use them. If not, perhaps some of the further readings will be of help.

References and Further Readings

All of the citations which follow, if they have specific page numbers listed after them, are recommended for further reading. The recommended first choice has two asterisks after it; a single asterisk follows recommended second choices

Barnes-McConnell, P. W. (1978). Leading discussions. In O. Milton (Ed.), On college teaching: A guide to contemporary practices. San Francisco: Jossey-Bass. pp. 62 – 100.**

Bligh, D., Ebrahim, G. J., Jacques, D., & Piper, D. W. (1975). Teaching students. Devon, England: Exeter University Teaching Services. pp. 146 – 172.

Bloom, B. S., Engelhart, M. D., Furst, E. J., Hill, W. H, & Krathwohl, D. R. (1956). Taxonomy of educational objectives: Handbook I, cognitive domain. New York: David McKay.

Cashin, W. E. (1985). Improving lectures. (IDEA Paper No. 14.) Manhattan, KS: Kansas State University, Center for Faculty Evaluation and Development.

Cashin, W. E., Brock, S. C., & Owens, R. E. (1976). Answering and asking questions. Manhattan, KS: Kansas State University, Center for Faculty Evaluation and Development. 17 pp.

Crow, M. L. (1980). Teaching as an interactive process. In K. E. Eble (Ed.), Improving teaching styles: New directions for teaching and learning, No. 1. San Francisco: Jossey-Bass. pp. 41 – 55.*

Davis, R. H., Frey, J. P., & Alexander, L. T. (1977). The discussion method: Guides for the improvement of instruction in higher education, No. 6. East Lansing: Michigan State University. 40 pp.*

Eble, K. E. (1976). The craft of teaching. San Francisco: Jossey-Bass. pp. 54-65.

Fuhrmann, B. S., & Grasha, A. F. (1983). A practical handbook for college teachers. Boston: Little, Brown. pp. 141 – 164.

Gronlund, N. E. (1978). Stating objectives for classroom instruction. (2nd ed.). New York: Macmillan.

Hyman, R. T. (1974). Way of teaching. (2nd ed.) Philadelphia: J. B. Lippincott. pp. 69 – 186.

Krathwohl, D. R., Bloom, B. S., & Masia, B. B. (1964). Taxonomy of educational objectives: Handbook II, affective domain. New York: David McKay.

Lowman, J. (1984). Mastering the techniques of teaching. San Francisco: Jossey-Bass, pp. 119 – 145.

McKeachie, W. J. (1986). Teaching tips: A guidebook for the beginning college teacher. (8th ed.). Lexington, MA: D. C. Heath. pp. 27 – 52.*

McKnight, P. C. (1978). On guiding (not leading) discussions. Manhattan, KS: Kansas State University, Center for Faculty Evaluation and Development. 19 pp.

Olmstead, J. A. (1974). Small-group instruction: Theory and practice. Alexandria, VA: Human Resources Organization. 129 pp.

Rogers, C. R. (1969). Freedom to learn. Columbus, OH: Charles E. Merrill.

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Improving Multiple-Choice Tests

by

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" . . . the tendency in course examinations is to pose the question 'How much do you remember of what has been covered?' rather than 'What can you do with what you have learned?' "
Dressel (1976, p. 208)

The classroom test is one of the most important aspects of the teaching-learning process, and designing the classroom test is one of the most demanding responsibilities facing college and university instructors. Unfortunately, most of us have had little, if any, preparation in the craft of writing tests; consequently, the process is not only difficult, it is also frustrating and often ineffective.

Writing test questions will always be demanding, even for experienced instructors, but it will be less frustrating for those who know the techniques for writing specific types of items and have some guidelines for general test construction.

The multiple-choice item has been chosen as the focus of this paper for three reasons. First, multiple-choice items can be written to evaluate higher levels of learning, such as integrating material from several sources, critically evaluating data, contrasting and comparing information. Second, multiple-choice items can be very useful for diagnostic purposes, for helping students see their strengths and weaknesses. Third, multiple-choice items are often used in college and university classes; therefore, it is especially important that instructors write them well. Although these strengths are shared by some other item types, the multiple-choice item is a powerful teaching-learning tool if the instructor has designed the item properly.

What Is a Multiple-Choice Item?

The multiple-choice item requires that students select the correct answer to a question from an array of alternative responses that are written by the instructor. All multiple-choice items have the same three elements: (1) an item stem that presents the problem, (2) the correct or keyed option, and (3) several distractor options, incorrect alternatives that are likely to be plausible to the student who has not completely mastered the learning being tested. Several variations of the standard multiple-choice item have been used in classroom tests. Some of these will be described later. Typically, multiple-choice items present the problem in one of two formats: the complete question, e.g., What is the most frequently used type of test item in college-level examinations?, or the incomplete statement, e.g., The most frequent type of test item used in college-level examinations is. . . . The students are directed to select either the correct answer or the best answer from the list of options provided. In the correct answer form, the answer is correct beyond question or doubt while the others are definitely incorrect. In the best answer version, more than one option may be appropriate in varying degrees; however, it is essential that the keyed or "best" response be the one that competent experts would agree upon.

It may appear to be fairly simple to construct items in the multiple-choice format. Actually, the formatting is simple; it is constructing a meaningful and worthwhile item that is so difficult and time-consuming. "An ingenious and talented item writer can construct multiple-choice items that require not only the recall of knowledge but also the use of skills of comprehension, interpretation, application, analysis, or synthesis to arrive at the keyed answer." (Thorndike & Hagen, 1969, p. 103). How many of us who teach at colleges and universities would describe ourselves as "ingenious and talented" while we struggle to write effective multiple-choice items? Wilbert J. McKeachie (1986, p. 91) has said that " . . . the greater your experience in their construction, the longer it takes per [multiple-choice] item to construct a reasonably fair, accurate, and inclusive question." In other words, as you get better, things may seem worse! We cannot promise you ingenuity and talent. We do hope to help you become a more competent and successful writer of multiple-choice items by sharing some of the guidelines that measurement experts and experienced instructors have recommended.

Many college teachers believe the myth that the multiple-choice question is only a superficial exercise—a multiple-guess—requiring little thought and less understanding from the student. It is true that many multiple-choice items are superficial, but that is the result of poor test craftsmanship and not an inherent limitation of the item type. A well designed multiple-choice item can test high levels of student learning, including all six levels of Bloom's (1956) taxonomy of cognitive objectives.

LEVELS OF COGNITIVE LEARNING

Evaluation
Synthesis
Analysis
Application
Comprehension
Knowledge

Knowledge:	simple recognition or recall of material
Comprehension:	restating or reorganizing material to show understanding
Application:	problem-solving or applying ideas in new situations
Analysis:	separating ideas into component parts, examining relationships
Synthesis:	combining ideas into a statement or product new to the learner
Evaluation:	judging by using self-produced criteria or established standards

Some writers prefer fewer levels, e.g., understanding (combining knowledge and comprehension), application, and higher-order cognitive objectives (combining analysis, synthesis, and evaluation). (See Gronlund, 1985b, for a further treatment of levels of educational objectives.)

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Strengths of Multiple-Choice Tests

Multiple-choice items are often described as the most versatile of all item types, suitable to a wide range of instructional goals.

1. Multiple-choice items can be used to test **all levels of learning**, from knowledge to evaluation.

2. Multiple-choice items can assess the **ability to integrate information** from several sources.

3. Multiple-choice items are **very useful for diagnosing student difficulties** if the incorrect options are written to reveal common errors.

4. Multiple-choice items provide an **excellent basis for post-test discussion**, especially if the discussion includes why the distractors are wrong as well as why the correct answers are right.

Multiple-choice items also share many of the strengths of other selected response items, i.e., true-false, matching, etc.

5. Multiple-choice items can provide a **more comprehensive sample of subject material** because more questions can be asked.

6. Multiple-choice items adapt to a **wide range of content and difficulty levels**.

7. Multiple-choice items require relatively **less student time to answer**.

8. Multiple-choice items can be **easily and accurately scored** by a person or machine.

Limitations of Multiple-Choice Tests

Of course, multiple-choice items also have disadvantages.

1. Multiple-choice items are **open to misinterpretation** by students who read more into questions than was intended.

2. Multiple-choice items may **appear too picky** to students, especially when the options are well-constructed.

3. Multiple-choice items, when written to assess higher levels of learning, require significant intellectual effort both in reading and in answering, **causing some students to be anxious**.

In addition, multiple-choice items share the limitations of other selected response items.

4. Multiple-choice items **deny demonstration of knowledge beyond the range of options provided**.

5. Multiple-choice items are **difficult to phrase** so that all students will have the same interpretation.

6. Multiple-choice items **take time and skill** to construct effectively.

7. Multiple-choice items are so easily constructed to assess basic factual knowledge that instructors **often fail to test higher levels of thinking**.

8. Multiple-choice items are **ill-suited to assess affective or attitudinal learning** because they are easily "faked."

9. Multiple-choice items **encourage guessing**—after all, one option is correct.

Recommendations

When Should Multiple-Choice Items Be Used?

Knowing the strengths and limitations of multiple-choice items can help instructors make better decisions about whether or not to use these items in particular testing situations. Use multiple-choice items for the following instructional goals:

1. When you wish to test the **breadth of student learning**. Multiple-choice items offer the opportunity to sample a greater breadth of learning than do questions that require a lot of student writing. Because they take considerably less time to answer, many more questions can be asked and so more content tested.

2. When you want to test a **variety of levels of learning**. Multiple-choice items are extraordinarily flexible in that they can be used to assess the full range of Bloom's taxonomy (1956). Do not discount multiple-choice when you want to evaluate abilities to think critically and solve problems effectively.

3. When you have **many students who will be taking the test**, then multiple-choice tests are very efficient. If the class is very small in size, it usually is not worth the time it will take to construct an effective set of multiple-choice items. Carefully consider whether other item types will serve your testing purposes.

4. When you have **time to construct the test items**. Remember that effective multiple-choice items, which assess more than basic factual knowledge, require a great deal of time and effort to construct. If you do not have the time, another type of test will be a wiser choice.

5. When **time is limited for scoring**, then selected-response items are often the better choice. While it may have taken an hour to construct a multiple-choice item, it will take less than a second to score it.

6. When it is **not** important to determine how well the student can **formulate a correct or acceptable answer**. The answers are definitely provided in multiple-choice items. Even if the question requires critical thinking skills, it may be possible for a student to get the answer right because of clues in the options or by guessing. When it is important for students to formulate their own answers, multiple-choice will not do.

Required Preconditions

Before considering specific suggestions for writing multiple-choice items, there are a combination of abilities that, according to Alexander G. Wesman (1971), are necessary to write successful test items.

7. You must **have a thorough mastery of the subject matter** being tested. You must not only understand the implications of the facts and principles of a particular field, but you must also be aware of common fallacies and misconceptions.

8. You must **develop and use a set of educational objectives** to clearly guide your efforts to help students learn. Unless you have carefully considered what you want students to learn, you will not be able to evaluate their progress with any accuracy. This means that you must develop a test plan or table of specifications to guide your item writing. For the vast majority of tests, a two-dimensional table is sufficient. On one dimension, list the areas and subunits of the content you wish to test. On the second dimension, list the various levels of learning you wish to test, for example, understanding, application, and higher-order cognitive objectives. You must also decide what proportion of the test you want to devote to each area of content and each level of learning. Finally, as you write the test items, you should keep a tally of how many items fall into each cell of your total plan to insure that your test actually covers the learning as you originally intended. (See example.)

LEVELS OF LEARNING

Topics	Understanding	Application	Higher-Order
A	5%	10%	10%
B	5%	20%	10%
C	10%	20%	10%

According to this table of specifications, approximately 40 percent of the instruction time was spent on topics "B" and "C" at the application level and 20 percent at the higher-order level. The test should reflect that proportion. (See Gronlund, 1985a or Mehrens and Lehman, 1984, for further treatment of tables of specification.)

9. **Know the students** who will be taking the test in order to appropriately adjust the complexity and difficulty of the items. Sophomores in Introduction 101 may look the same semester after semester, but there are likely to be many differences in the educational backgrounds and intellectual abilities of the groups. Design your test so that the students can demonstrate their learning.

10. You must be a **master of written communication**, able to communicate with precision and simplicity and you must use language that the students understand.

Constructing Multiple-Choice Items

The following recommendations for constructing multiple-choice items reflect the collective experience and wisdom of many authors. These recommendations are written in chronological order. Several works are listed in the References and Further Readings section for those of you who wish to read more extensively.

11. **Spread the work across time**. It is unwise to wait until the night before an exam is scheduled to construct the test items. It is impossible to construct effective multiple-choice items in such a limited time. Not only do you need time to construct the items, you need an opportunity to review and revise. If you write a question or two after each class or on a weekly basis, the collection is more likely to be representative of your instruction.

12. **Use note cards for writing the items**. This makes it much easier to file according to your test plan, rearrange, rewrite, and discard items. Better yet, if you have access to a personal computer, use it.

13. Really concentrate on writing items to **evaluate higher levels of thinking**. Avoid the pitfall of writing items that test only memorization of basic factual knowledge. Many instructors (especially those who are writing the test questions just before the test) fall into this trap and pull their students in with them.

14. **Write the stem first**. The stem should present a single, definite problem as a question or incomplete statement. The problem should be one of significance in the course.

15. **Concentrate on evaluating student ability to understand, apply, analyze, synthesize, and evaluate**. It is difficult to write questions that evaluate these higher cognitive levels; but if critical thinking is what you want students to do, you will have to test for it. Students have a tendency to study "what will be on the test" and to study only what will be on the test.

16. **State the problem concisely, but completely**. What the student is to answer must be obvious, and the student should be able to discern the problem without reading all of the options. A direct question usually does this more clearly than an incomplete statement. There are times, however, when the question is just too convoluted or confusing for easy interpretation; then the incomplete statement may be preferable, or perhaps an item type other than multiple-choice is more appropriate.

17. **Write the stem to include all the information essential to determining the problem**, but omitting irrelevant material that merely serves as padding, unless the student's determination of what is relevant is part of what you want to test.

18. **Avoid unnecessary repetition in the options** by including as much of the item as possible in the stem. This is especially important when using the incomplete statement format. Forcing students to reread a phrase several times wastes time they could put to better use when taking a test.

19. **State the problem or ask the question in a positive form**. The use of negatives can be confusing to even the most intelligent reader, and anxious students often completely miss little words like "not." On those rare occasions when you decide that you must use negatives, use **boldface**, underlining, or CAPITAL letters. Do not use double negatives, e.g., negatives in both the stem and the options.

20. **Write the correct or best response after writing the stem**. Be certain that the best response is indeed best, that is, would be acknowledged as best by authorities in the field. State this response **as briefly as possible**, and without ambiguities so that all knowledgeable students will read it with the same interpretation. Having colleagues or former students critique your questions for clarity before using them on a test can help to avoid such difficulties.

21. **Avoid making the correct option longer than the distractors**. Test-wise students are very aware of this fault and use this clue to choose the correct answer without knowing the correct answer. The emphasis on the keyed response being absolutely correct sometimes leads to wordiness, and instructors tend to spend much less time developing the distractors which then tend to be shorter. Write the correct response and the distractors, and then compare the lengths. If correct answers are consistently longer (or shorter) as you write multiple-choice items, edit as necessary.

22. **Write the distractors after writing the correct option**. The effectiveness of multiple-choice items can be undermined by the sloppy preparation of the incorrect options. Designing distractors is actually quite challenging because these options must be wrong, yet be plausible enough to attract the attention of students who do not know the material as well as they should.

23. **Make all distractors plausible responses**. Avoid writing poor alternatives just for the sake of having more options; they simply become throwaway options. The criterion is whether or not the distractors test a discrimination that is important; if not, do not use it. Once in a while, a ridiculous option can relieve some of the tension that pervades a testing situation, but only once in a great while.

24. **Be sure that the distractors use words that ought to be familiar to the students**. Using highly technical language or the vocabulary of experts, terms that have not been used in class, forces students to choose correct answers without knowing the meaning of one or more of the options. If the students were not expected to learn the terms, do not include them in the options.

25. **Write distractors that are distinct from each other**. If all the distractors are too much alike, the test-wise student will use this clue to eliminate the group of look-alikes in favor of the dissimilar, correct response. Similar distractors may also indicate that the question should not be presented in the multiple-choice format. Avoid alternatives that overlap or include each other. This error is likely to be distracting to students who read carefully and know the material well, which can result in the more knowledgeable student being penalized by the instructor's lack of item-writing skills.

26. **Critique for general errors in style and format**. Delete any irrelevant clues that could lead a student to select the correct answer or eliminate one or more of the wrong options without knowing the material. Measuring the test-wiseness of the students is not the intent of the test.

27. **Be careful in using specific determiners**, such as "all," "never," "always," or other all-inclusive terms that are more likely to be found in incorrect options. Similarly, qualifiers such as "usually," "sometimes," and "maybe" are more likely to be found in the keyed item. However, sometimes the content permits using absolute specific determiners correctly, and so can keep the test-wise student "honest," e.g., "The president of the United States must always be at least 35 years old" is correct.

28. **Avoid grammatical inconsistencies** between the stem and the options. These are very useful clues for the student who is competent in syntax.

29. **Use "none of the above" as an option with caution**. Some faculty believe that the option, "none of the above," should never be used in a multiple-choice item. This belief is correct for a "best answer" type item. (Nor should options like "all of the above" or "both A and B" be used in "best answer" items.) However, for "correct answer" items, where there definitely is a correct answer, the option, "none of the above," may serve a useful purpose, especially for items requiring mathematical calculations, or perhaps correct spelling or grammar in a language. Using "none of the above" can prevent correct answers

because of guessing, or save students from spending an inordinate amount of time on a problem they cannot solve. To be effective, the option must occasionally be the keyed response; otherwise, the students will see it simply as a throwaway option.

30. **Check once more** to be certain that the correct options are not consistently longer than the alternatives.

31. **Arrange options in a logical order**, if one exists. Numerical answers should be placed in numerical order and dates put in chronological order. Sometimes alphabetizing the options is appropriate.

Organizing the Layout of the Entire Test

Once the individual multiple-choice items are written, you must decide how to organize the groups of items on the test. If you are using several types of items on your exam, be sure to group all of the multiple-choice items together, etc.

32. **List options on separate lines**, arranged in a vertical column to clearly distinguish each option from the others. Printing the responses in tandem or arranging them across the page may save paper, but the result is difficult to read. You should not be testing reading skills.

33. **Use capital letters for the response options** if the student is to write the letter to indicate the selected answer. The handwritten, lower case letters "a and d" and "c and e" can be difficult to distinguish when scoring.

34. **Check to see that the correct answers are distributed randomly among the possible option positions.** If you have had a tendency to choose one position over others, for example, "B," it may become apparent to the test-wise student who seeks out such clues. If necessary, it is easy to rearrange the order of the options to correct this problem.

Interpretive Exercises

Many teacher-made multiple-choice tests pose a series of separate, unrelated questions. In constrast to this, the interpretive exercise format presents a series of multiple-choice items based on a common stimulus. The stimulus can be written material, also tables, graphs, maps, pictures, audio- or videotapes, etc. Interpretive exercise items can then be written to assess a wide range of student abilities, for example: to recognize generalizations, assumptions, or inferences; to apply principles; or to interpret data or experimental findings. To achieve this, however, the material must be novel or new to the students, not something previously covered in class or found in the textbook.

In addition to the general advantages of multiple-choice items in testing higher level and complex materials, interpretive exercises minimize the influence of irrelevant information because they confine the data to be interpreted to the material presented. This makes such exercises more difficult to construct; and for written material (the most common form), places heavy demands upon reading skills. Nevertheless, we believe the advantages of interpretive exercises warrant their increased use in college-level tests. (Gronlund, 1985a, has an entire chapter on the interpretive exercise which we strongly recommend for your consideration.)

Conclusions

We have focused this paper on multiple-choice items because we are convinced that they permit testing higher levels of learning which are appropriate to college but which often are not tested by teacher-made tests (including essay as well as selected response tests). We are not suggesting that other forms of selected response items, e.g., true-false and matching, are inappropriate, but we have omitted them because of space limitation. Several standard textbooks in the References and Further Readings section give detailed suggestions for designing such items. Nor are we suggesting that multiple-choice items should, or can, replace essay tests (a subsequent IDEA Paper will be devoted to essay tests). What we are suggesting is that many teacher-made multiple-choice tests can be significantly improved. We hope that this paper will be of some help to readers in achieving that improvement.

References and Further Readings

Those references below which are followed by an asterisk are standard texts on educational measurement. Each has one or more chapters on multiple-choice and other selection items, as well as chapters on other aspects of testing and grading.

Bloom, B. S., et al. (1956). **Taxonomy of educational objectives: Cognitive domain**. New York: David McKay.

Campbell, J. R. (1972). **In touch with students**. Columbia: Kelly Press.

Clegg, V. L., & Owens, R. E. (1984). **Tips for writing tests**. Manhattan, KS: Graduate Services and Publications.

Dressel, P. L. (1976). **Handbook of academic evaluation**. San Francisco: Jossey-Bass.

Ebel, R. L., & Frisbie, D. A. (1986). **Essentials of educational measurement** (4th ed.). Englewood Cliffs, NJ: Prentice-Hall.*

Eble, K. E. (1976). **The craft of teaching: A guide to mastering the professor's art**. San Francisco: Jossey-Bass.

Educational Testing Service. (1973). **Multiple choice questions: A closer look**. Princeton, NJ: Author.

Fuhrmann, B. S. & Grasha, A. F. (1983). **A practical handbook for college teachers**. Boston: Little, Brown.

Gronlund, N. E. (1985a). **Measurement and evaluation in teaching** (5th ed.). New York: Macmillan.*

Gronlund, N. E. (1985b). **Stating objectives for classroom instruction** (3rd ed.). New York: Macmillan.

Lowman, J. (1984). **Mastering the techniques of teaching**. San Francisco: Jossey-Bass.

McKeachie, W. J. (1986). **Teaching tips: A guidebook for the beginning teacher** (8th ed.). Lexington, MA: D. C. Heath.

Mehrens, W. A., & Lehmann, I. J. (1984). **Measurement and evaluation in education and psychology** (3rd ed.). New York: Holt, Rinehart and Winston.*

Milton, O. (1982). **Will that be on the final?** Springfield, IL: Charles C. Thomas.

Milton, O., & Associates (1978). **On college teaching: A guide to contemporary practices**. San Francisco: Jossey-Bass.

Roid, G. H., & Haladyna, T. M. (1982). **A technology for test-item writing**. New York: Academic Press.

Thorndike, R. L., & Hagen, E. (1969). **Measurement and evaluation in psychology and education**. New York: Wiley & Sons.

Wesman, A. G. (1971). Writing the test item. In R. L. Thorndike (Ed.) **Educational measurement**. Washington, D. C.: American Council on Education.

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Improving Essay Tests

by
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> " . . . it seems clear, even to the casual observer, that essay examinations still are widely used in spite of more than half a century of criticism by specialists in educational measurement . . ."
> Coffman (1971, p. 271)

Like every assessment technique, essay tests have their advantages and limitations. The position taken in this paper is that essay tests, despite their limitations, have a number of strengths and, therefore, appropriate uses in higher education, as long as we are aware of the limitations. There is considerable agreement in the educational measurement literature about how essay tests can be improved. Many of these recommendations are based on experience; some of these recommendations are based upon empirical research. I have not cited the original research; interested readers can find the references in the standard educational measurement texts identified in the "References and Further Readings" at the end of this paper.

What Is an Essay Test?

Coffman (1971, p. 271) describes an essay test as "one or more essay questions administered to a group of students under standard conditions for the primary purpose of collecting evaluation data." Their scoring requires expert judgment rather than the application of a clerical key. Administration under standard conditions distinguishes the essay test from the term paper or project report. However, I suggest that many of the recommendations concerning essay tests can also be applied, with appropriate adaptations, to term papers, project reports, oral exams, and other student products or processes used in assessing student achievement, including mathematical problems and artistic productions.

Essay questions are often divided into two types: extended response questions and restricted response questions.

Extended Response Questions. Other than stating the topic, extended response questions leave students free to determine the content and to organize the format of their answer. The students decide which facts are pertinent, and how to organize, synthesize, and evaluate them. Perhaps the classic example is: "How I Spent My Summer Vacation." Such questions are most appropriate when our objective is to test writing (composition) skills, including conceptualization, organization, analysis, synthesis, and evaluation, giving the student maximum choice regarding topic.

Restricted Response Questions. These limit both the content and the form (e.g. describe vs. compare and contrast) that the student's answer may take. Most writers agree that restricted response questions are the appropriate form when we wish to test content. All of the examples of essay questions which follow will be examples of restricted response questions unless otherwise stated.

Strengths of Essay Tests

Essay tests have a legitimate place in higher education because of the following strengths:

1. ***Can test complex learning outcomes*** not measurable by other means. An obvious example is the ability to express oneself in writing.

2. ***Can test thought processes,*** the students' ability to select, organize, and evaluate facts, ideas, etc; and their ability to apply, integrate, think critically, and solve problems. (Note: all of these can also be tested by appropriately designed multiple-choice items—see IDEA Paper No. 16, *Improving Multiple-Choice Tests*, Clegg and Cashin, 1986.)

3. ***Require that students use own writing skills;*** the students must select the words, compose the sentences and paragraphs, organize the sequence of exposition, decide upon correct grammar and spelling, etc.

4. ***Pose a more realistic task*** than multiple-choice and other "objective" items. Most of life's questions and problems do not come in a multiple-choice format, and almost every occupation, including engineering, business, technical, and service jobs, requires people to communicate in sentences and paragraphs, if not in writing, at least orally.

5. ***Cannot be answered correctly by simply recognizing the correct answer;*** it is not possible to guess. (Students can bluff, however.)

6. ***Can be constructed relatively quickly.*** This advantage is short-lived because any time saved in constructing the test is lost when scoring it. All well constructed tests require time and effort; the only choice is in when these will be expended.

Limitations of Essay Tests

The focus in this paper is on using essays for assessment. When essays are used as a learning experience to provide the students an opportunity to exercise a skill and then to give them feedback about their achievement, the limitations described below are of less concern. However, **as an assessment technique,** essay tests have the following serious limitations.

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1 ***Only limited content can be sampled.*** Therefore, essay tests are unreliable in assessing content. Because answering essay questions takes more time than answering "objective" items, less content can be tested. Most exams only sample a very small portion of the domain of content and skills to be learned. Therefore, when we rely solely on essay tests, differences in students' scores will to some extent reflect the "luck of the draw"—the questions you happened to include on the test—as well as reflect differences in the students' command of the entire domain of what you were trying to teach.

2 ***Yield unreliable scores.*** Not only have studies found differences in the grades assigned to essay questions by different scorers, but they have found differences for the same scorer grading the same question at different times. Thus, differences in student grades on an essay test may be due to *who* scored the question, or *when* it was scored, in addition to *what* the student knew or wrote.

3 ***Scores can be influenced by the scorer's impression of the student,*** e.g., general impression of the student, halo effect, and test-to-test or item-to-item carryover—knowing how well the student did on the previous test or item. Obviously, multiple-choice tests do not have this limitation.

4 ***Scores may be influenced by factors extraneous to the content being tested,*** e.g., handwriting, writing skills, spelling, and grammar.

5 ***Essay tests often provide the students with an opportunity to exercise POOR writing skills.*** When one considers the time pressure and anxiety connected with the typical essay test, it is surprising that the students do as well as they do. Most of the students' time in an essay test is spent physically writing. There is limited time to think, to organize creatively, to write a second draft, or proofread.

6 ***Essay tests are time consuming to score.*** Anyone who has ever graded essays needs no proof of this beyond his/her own experience.

Recommendations

These recommendations are divided into three sections: when should essay questions be used, constructing the test, and scoring the test.

When Should Essay Questions Be Used?

These recommendations are adapted from Ebel and Frisbie (1986).

1 ***To test writing skills.*** Obviously, the most appropriate way to test the students' ability to express themselves in writing is to have them write something (remembering that essay tests are less representative of day-to-day writing tasks than are papers, project reports, keeping a journal, etc.).

2 ***To test a small group.*** Despite all of the advantages of multiple-choice and other "objective" type items, when testing small groups of students, developing such items is not worth the effort. Short answer questions, e.g., one to a few sentences identifying or defining questions, can be useful to serve in place of multiple-choice items.

3 ***When the time to construct the test is more limited than the time to score it.*** Testing is a teaching responsibility so we have a professional obligation to plan ahead for it. However, constructing a make-up exam for one or a few students who were legitimately unable to take the regular exam would be an instance where the instructor would have limited time.

4 ***When the instructor has more confidence in his or her ability as a critical reader than as an "objective" test constructor.*** Granted that college teachers, like the rest of humanity, differ as individuals, nevertheless, I would suggest that college teachers should have in their repertoire the basic skills of their profession including the ability to construct reliable and valid tests, both "objective" and essay tests.

5 ***To encourage students to explore attitudes*** more than testing for cognitive achievement. This suggestion focuses more on teaching (helping the students learn) than on testing, but fits into our broader approach suggesting that readers consider these recommendations not just for essay tests in the narrow sense, but also for papers, reports, journals, etc. Furthermore, in a later IDEA Paper it will be urged that testing, and all of our assessment techniques, should be an integral part of our instructional design, not just something added on for evaluation, i.e., determining grades.

Constructing the Test

6 ***Allow adequate time to construct essay questions.*** Although a five-question essay test can be constructed faster than a 50-item multiple-choice test, writing an effective essay question takes thought, and therefore time. One poorly designed essay question would have an effect similar to ten poor multiple-choice items.

7 ***Limit the use of essay questions to learning outcomes that cannot be satisfactorily measured by "objective" items.*** Given the serious limitations of essay tests, especially with respect to reliability, the recommendation is to use essay questions for assessment only when you have to. Especially, do not use essay questions to test facts, or learning at the lower levels of Bloom's taxonomy (Bloom et al., 1956. For brief discussions of Bloom's taxonomy see Clegg and Cashin, 1986, and Gronlund, 1985b.)

8 ***Design the essay question to test only one or a few specific instructional objectives per question.*** This seems fairly clear; you must make explicit what you want to test (a necessary corollary is that you had to be clear about what you were trying to teach, i.e., expected the students to learn).

For example, the following is a poor essay question: "Why do animals migrate?" It might be better to ask: "Describe three hypotheses which might explain why animals migrate south in the fall of the year." This second version, however, points out that what is being tested basically is the students' memory of what was in the lecture or text—not a recommended use of essay questions. (See Clarence H. Nelson's chapter, "Evaluation in the Natural Sciences," in Dressel and Associates, 1961, for ways in which the students' understanding of these theories might be tested using "objective" items.)

A more appropriate example of a question testing a specific instructional objective, in this case a foreign language (Latin), is:

> Read the above passage and decide whether it was written by a classical or patristic Latin writer. Support your position by identifying and explaining specific phrases or passages which illustrate the characteristic writing style. Also identify phrases, etc., which might support the opposing position.

The objective was to assess, not simply students' passive understanding of the elements which characterize the two different styles, but also their ability to apply that knowledge in their reading. Of course, to do this the students also needed to have a certain proficiency in translating Latin. The instructor chose a passage unfamiliar to the students by an author whose writing contained elements of both styles (and a passage where the content did not serve as a clue), so it was possible for the students to make a case for either side. The primary point of the question was not whether the students correctly classified the author, but how good an argument they could make for their positions, and how aware they were of the contrary evidence. I consider this question to be at least at the Application level of Bloom's taxonomy.

9 ***Give preference to focused questions that can be answered briefly.*** When it fits your instructional objectives, several short essays will yield a more reliable score than fewer long questions. On the other hand, a short answer question is less likely to permit the students to demonstrate complex mental processes. Also, if an instructional objective can be tested by a short essay, perhaps it can also be tested by a multiple-choice item.

10 ***The question should clearly indicate the task(s)*** the students are to address with respect to both content and process. On one history of philosophy exam the students were given the following topic, "Locke: the key to Hume." While I applaud the creativity of the instructor, the question can be improved. For example:

> Locke: the key to Hume. Discuss the influence of the philosophy of Locke on Hume's theory of knowledge. **OR:**
>
> Locke: the key to Hume. Discuss the similarities and differences in the philosophies of John Locke and David Hume with respect to: the origin and relation ideas, the nature of belief, (etc.)

Gronlund (1985a, p. 220) provides a list of 12 types of thought questions and sample item stems, e.g.

> Synthesizing: Describe a plan for
> Evaluating: Describe the strengths and weaknesses

Hopkins and Stanley (1981, pp. 214-216) list 21 types of essay questions, e.g.

> Inferential thinking: Discuss whether the authors of this text are likely to use essay tests frequently in their measurement classes. Support your opinion with principles and recommendations given in the text.

One very helpful way to determine whether you have clearly specified the task is to give your essay questions to colleagues and see if they understand the questions. Also, ask them what instructional objective(s) they think you are trying to test with each question.

11 ***Make explicit the approximate time or length for each question, and/or the number of points.*** This is especially important if the questions are not weighted equally. Therefore, we might add to the "Locke" question above: (50 points, spend about 30 minutes, five pages on this question)

12. ***Provide sufficient time*** for the students to write the answer. See how long it takes you or a colleague to write an answer, then allow the student several times that amount of time. You do not want your tests basically to assess writing speed.

13. ***Use novel questions;*** otherwise you are testing memory. Novelty can provide interest, and therefore motivation, for the students. One psychology professor teaching a Systems of Psychology course asked the students to imagine that they were a rat in the lab of specific psychologists, and then describe what might happen to them with respect to a number of experimental variables.

14 ***Avoid optional questions,*** i.e., letting the students choose which question(s) they will answer. The only advantage is student morale, and the reasons against providing the students with a choice are persuasive:

A. ***The students are taking different tests.*** Thus, there is no common basis for comparison and the scoring becomes unreliable. It is almost impossible to write several essay questions which are of equal difficulty; the result is that different students are taking tests of varying difficulty but you will grade these the same. This may penalize the "better" students because they may choose the more difficult (challenging) questions and so will not score as well as students who choose the easier questions.

B. ***In real life we usually cannot pick our problems.*** In the world of work, at home, and in society, we are expected to address all of the major issues facing us, not the four out of five we feel most competent to handle.

Exception: There is one notable exception to the recommendation to avoid optional questions, and that is with extended response questions where you wish to test a skill. The most common example is assessing writing skills. Often students are given many topics and told to choose one to write on. The hope is that the list of topics will be broad enough to enable every student to find a topic he or she knows about. Thus, differences in the final essays will not reflect differences in their knowledge of the content, but will only reflect differences in writing skills. The same argument applies to a variety of other processes or skills: critical thinking, public speaking, artistic expression, etc. However, when your primary purpose is to test command of content, providing optional questions is not advised.

15 ***Do NOT give the students a short list of essay questions to prepare BEFORE the test.*** Although the intent in doing this is usually to help the students, the results are often undesirable. Such essay tests may simply test the students' ability to memorize someone else's thinking. If the list is short, it may encourage the students not to study all of the content. This can be exacerbated if the students know they will only have to answer, say, two out of four questions. In such cases they may simply omit studying two of the questions.

16 ***Prepare the students to take the test.*** Consider whether part or all of a class session might profitably be spent letting the students respond to a typical sample of your essay questions and then discussing what you look for when scoring them. Using a question from a previous year where you kept samples of "A" papers, "B" papers, etc., could be even more helpful to the students.

Scoring Essay Tests

The following recommendations are made to enhance the reliability and validity of scoring essay tests. The goal is to insure as much as possible that differences in students' essay scores reflect differences in their respective achievement, and nothing else.

17 ***Fit the scoring approach to the type of essay question.*** Two approaches are described in the literature: analytical (point-score) and global (holistic). (See Mehrens and Lehmann, 1984, pp. 114-116, for a longer discussion.)

Analytic (point-score) Method. This method is recommended for restricted-response questions. The ideal or model answer is broken down into several specific points regarding content. A specific subtotal point value is assigned to each. When reading the exam, you need to decide how much of each maximum subtotal you judge the student's answer to have earned.

Global (holistic) Method. This is recommended for extended-response questions. The rater reads the entire essay and makes an overall judgment about how successfully the student has covered everything that was expected in the answer and assigns the paper to a category (grade). Generally, five to nine categories are sufficient. Ideally, all of the essays should be read quickly and sorted into five to nine piles, then each pile reread to check that every essay has been accurately (fairly) assigned to that pile which will be given a specific score or letter grade.

18. When using analytical scoring for restricted-response questions, ***outline the model (ideal or acceptable) answer BEFORE you begin to read the essays.*** The specificity of the answer, however, may vary with the question. It is recommended that you read a sample of the actual essays before you begin to assign scores. Ideally, you should read all of the essays quickly to check (and perhaps modify) your model answer, then reread all of them to assign scores. In practice this often is not feasible, but remember that your goal is to have the students' scores reflect achievement on a common task. Also, you want to ***use realistic standards;*** reading several or all of the essays before assigning scores helps achieve this; having a colleague read your model answer would also help.

Ebel and Frisbie (1986, p. 127) suggest that some of the common reasons that students do not obtain maximum credit are:

> (1) answer includes incorrect statements,
> (2) relevant material is omitted,
> (3) irrelevant material is included,
> (4) student commits errors in logic, reaches unsound conclusion(s),

(5) student writes unclear answer, often because of poor writing skills (or poor handwriting), and
(6) student commits flagrant errors in grammar, spelling, etc.

Your model answer should provide guidelines for you to make an accurate assessment of at least the first three.

19. ***Keep the identity of the student anonymous.*** Your score should reflect your assessment of the adequacy of the answer and not anything else you know about the student.

20. ***Score one answer at a time*** (in a single, uninterrupted session if feasible). Experience suggests that most of us do not read all of the essays first before rereading them to assign a score. Reading the answers to single question (or mathematical problem) in a single sitting is at least a partial help for insuring that the students are being scored based upon a common set of criteria.

21. ***Shuffle the exams after scoring each question when the test consists of several items.*** This is suggested for a couple of reasons. First, if you have not followed some of the recommendations suggested above about clearly defining our model answer before assigning grades, there is a tendency to change expectations while reading the answers, e.g., you may become more and more depressed as you read the students' answers because no one has gotten it "right" and so tend to score essays read later more leniently. Second, if you keep the exams in the same order, you are more likely to be influenced by how well (or poorly) that student did on the previous question. Related to this, it is helpful to have the students start each answer on a new page so that you cannot see the score on the previous question.

22. ***Decide beforehand how you will handle grammar, spelling, handwriting, etc.*** Obviously, if you cannot read the student's writing, you cannot score his or her answer. If the writing (composition) is so unclear that you do not understand, you should not give credit. However, there are many instances where the substance of an answer is understandable, but there are obvious errors in spelling, grammar, etc. Sometimes students will take the position that these things should only influence the grade in English courses. However, college educated people should be able to write clear, grammatical, correctly spelled English. Even engineers and business people write reports and letters. You, however, must decide how much these things will count, especially in light of the time pressures typical in essay testing. You should also inform the students of your grading criteria well before they take any test.

23. ***When feasible, use multiple readings and/or readers.*** For really important essays, like undergraduate theses, two separate readings and scores are desirable, with the grade being the average of the two scores. Better yet, having two separate readers score the test is desirable. This is often done with essays used for placement in English composition, senior comprehensive exams, and the like. It is an effective, but time consuming, way to improve reliability.

24. ***Provide extensive comments.*** Although one of the purposes of an essay test, paper, etc., is to assess the students' past learning, they can and should also be used to help students continue to learn. Providing extensive comments, not just a grade, is a effective way to do this. One practice is to have the students write on every other page of the bluebook, leaving the opposite page for instructor commments. Since we can talk faster than we can write, some instructors, e.g., those teaching writing, have each student purchase an audiotape and the instructor records extensive comments on that tape. Because of time pressures comments are likely to be brief, but be sure that they are at least clear. Again, occasionally checking with a colleague can be very informative. If you use a code, tell the students; better yet, put it in writing. One student commented after an entire semester of receiving essays with check marks that he did not know whether the check meant good, or bad, or important, or what.

25. ***Consider keeping a test file on your essay questions.*** Over time you can develop a collection of essay questions (math problems, paper assignments, etc.) for specific instructional objectives. Your file should include your instructional objective(s), the question (problem) itself, any improvements that seem appropriate based upon past use, AND a record of how well the students performed on the question and any comments you have. Ideally, keep samples of "A" answers, "B" answers, etc. There is no sense in reinventing the wheel every year, especially if it is your own "wheel."

Conclusion

Despite serious limitations, especially with respect to reliability, essay tests have definite strengths, the most notable being their ability to test writing composition skills. Although most of the recommendations in this paper focus on the essay test per se, they can also be applied to papers, project reports, mathematical problems, artistic productions, and the like, with the necessary adaptations. Also, the focus of this paper has been on using essays to assess student learning. However, most of the caveats expressed are of less concern when using writing essays as a learning experience to provide students with feedback about their performance. It is hoped that the recommendations offered in this paper will help college teachers improve their essay tests.

References and Further Readings

The four references that are followed by an asterisk are standard texts on educational measurement. They contain chapters on essay tests (as well as "objective" tests, grading, etc.). I would take the position that every college teacher should have an educational measurement text in his or her library. There are many available—these are four books particularly worth your consideration.

Bloom, B. S., Englehart, M. D., Furst, E. J., Hill, W. H., & Krathwohl, D. R. (1956). ***Taxonomy of education objectives: Handbook I, the cognitive domain.*** New York: David McKay.

Clegg, V. L., & Cashin, W. E. (1986). ***Improving multiple-choice tests.*** (IDEA Paper No. 16). Manhattan, KS: Kansas State University, Center for Faculty Evaluation and Development.

Coffman, W. E. (1971). Essay examinations. In R. L. Thorndike (Ed.) ***Educational measurement*** (2nd ed., pp. 271–302). Washington, D.C.: American Council on Education.

Dressel, P. E., & Associates. (1961). ***Evaluation in higher education.*** Boston: Houghton Mifflin.
Despite its 1961 publication data, this is one of a few books that gives extensive treatment to testing approaches for several different academic fields at the college level, e.g., natural sciences, social sciences, humanities.

Ebel, R. L., & Frisbie, D. A. (1986). ***Essentials of educational measurement*** (4th ed.). Englewood Cliffs, NJ: Prentice-Hall.*

Gronlund, N. E. (1985a). ***Measurement and evaluation in teaching*** (5th ed.). New York: Macmillan.*

Gronlund, E. E. (1985b). ***Stating objectives for classroom instruction*** (3rd ed.). New York: Macmillan.

Hopkins, K. D., & Stanley, J. C. (1981). ***Educational and psychological measurement and evaluation*** (6th ed.). Englewood Cliffs, NJ: Prentice-Hall.*

Mehrens, W. A., & Lehmann, I. J. (1984). ***Measurement and evaluation in education and psychology*** (3rd ed.) New York: Holt, Rinehart and Winston.*

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LABORATORY TEACHING

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Teaching in the instructional laboratory is a very different experience than teaching in the regular classroom and is equally as difficult and demanding. The major difference lies in the nature of the laboratory as an intensely participatory mode of instruction and in the fact that this mode requires frequent interaction between intructor and student. The laboratory context demands not only excellent communication skills but also a solid experience-based competence in experimental techniques, applications, and safety factors. In spite of these demands, teaching in the laboratory has great rewards. Direct, frequent student contact as well as group interaction, all within the larger team framework, provide a unique opportunity for personal and professional growth. The laboratory is a setting where your ability and enthusiasm as a teacher will profoundly affect the attitudes and success of each student.

Let us look in more detail at some of these differences and demands and suggest some ways in which you may enhance your laboratory teaching. The one-on-one interaction is of course a tutorial mode that above all requires patience. Students who are learning to manipulate apparatus need to know that technique has a rational basis and that most practical work requires repetition and mistake-making for a successful outcome. Much of your credibility as an instructor rests on

the fact that you can skillfully perform the required operations. This must also be done in a manner in which students can have confidence as they attempt to emulate you. The only way to understand the instructional problems and subtleties is to carry out the operations and experiments BEFORE you teach them. Remember that in the laboratory every student is being asked to perform actively and in real time. Even the brightest students often have difficulty with simple manipulations involving hand coordination, for example. Try and avoid the baby-sitting syndrome so often seen in laboratory instruction. The laboratory manual (of software, etc.) may be excellent, but it is never completely sufficient.

The laboratory instructor is almost always part of a team. The lab course is usually associated with other very different modes of instruction -- lecture, discussion or groups/quiz sections. This can lead to confusion and to the compromise of educational goals. As a lab instructor make sure you talk to the faculty member in charge and try to understand how the lab course fits into the general teaching context. As a G.T.A. in a lab course you should be able to tell your students why you (and the institution) are asking them to do this laboratory. One of the most common questions about lab courses i.e., "Why doesn't the lab follow the lecture course?" Often the reason is simple -- doing is very different from learning about. The usual approach in higher education is that learning precedes doing and that practice is the application of theory -- a philosophy that is not conducive to convincing students of the importance of

laboratory instruction.

Finally try to be aware that the laboratory experience is an extraordinary and unique opportunity for you the teacher to reveal the rich, complex and human side of practising the art or the science. You, as a laboratory instructor, will most surely determine your student's attitude towards the particular discipline.

EVALUATING AND IMPROVING YOUR TEACHING

The following section is adapted from the chapter of the same title that appears in the Teaching Fellows Handbook published by the Harvard University Graduate School of Arts and Sciences and the Harvard-Danforth Center for Teaching and Learning. The original was written by John Boehrer, Associate Director of the Teaching Lab at the Harvard-Danforth Center, and it is adapted with permission.

Teaching is a learning process. Responsibility for conducting the section or course seems to rest solely with the teaching assistant, yet it is impossible to conduct a productive class without input from the students. To be effective, teaching requires careful attention to the students and skillful responses to what they express. Experience enables teachers to observe their students with accuracy and insight, and to incorporate observation and feedback into their teaching. Learning to do this is an essential part of learning to teach. Getting feedback is not something to put off until you get your feet on the ground. It is the way to get them on the ground.

Many teaching assistants report a strong sense of isolation in doing their jobs. In part this comes from an absence of common enterprise: course coordinators and teaching assistants often spend little time together working on teaching the course. In part the isolation also manifests the natural boundary between teacher and students that is a function of their complementary but separate perspectives. The boundary comes with the territory. Teachers need to acknowledge and respect it, and find ways to communicate across it.

While the communication between you and your students is critical, it involves some issues -- authority, responsibility, knowledge, power -- that can inhibit everyone. teaching assistants often express both a desire to know what their students think of the class and a belief that they will not be candid about it. The belief has some foundation. Students assume that teachers will evaluate them. They do not usually consider it natural, or find it comfortable, to evaluate their teachers, at least in ways that involve direct, forthright communication. Asking them to confront you with summary judgments of your teaching probably will not yield much candid or useful information. Fortunately, there are more promising approaches.

Taking three initiatives will help you encourage your students to take an active part in improving the quality of their own learning. First, you may want to consider inviting them to participate in setting the class agenda, by telling you what interests them, what difficulties they are having, what they would like to discuss. Tell them how you propose to spend the class time, and ask them to make suggestions for additions and help you set priorities. Ask them to suggest discussion questions or single out concepts for review. If you are using the class mainly to cover new material, stop occasionally -- and leave time at the end -- to ask your students what they want you to clarify. The more they feel they are a part of the process, the more willing they will be to say how well it is working for them.

The second useful initiative is to set a positive example

of giving feedback by being supportive, responsive and open. Doing this will almost certainly increase your students' willingness to give you candid feedback.

* Acknowledge their efforts, even when they get poor results.
* Let them know that you expect their continued efforts to lead to success.
* Offer students the chance to correct their own mistakes before passing the question to others.
* When their answers are wrong, explain why, and help them understand their difficulties. Focus on the strengths in their work as well as the weaknesses.
* Set a climate of respect for learning rather than make a virtue of being right.
* Respond genuinely to students who participate in discussions: ask for clarification, reasoning, and evidence.
* Give students credit for their thinking, and tell them -- even the "A" students -- how they can improve it. Let them understand that your challenge means respect for their ability.
* Avoid assuming that you always know what they mean, or what something means to them. Make a habit of testing your understanding, and foster an atmosphere of open inquiry.

Let them know, also, that you are open to learning yourself. Their willingness to take the risks that learning requires will depend heavily on your attitude toward your own

uncertainty and limited knowledge.

The third, and most important, initiative you can take in giving feedback and asking for it, is to comment on the work that people do rather than on the people themselves. Students and teachers both tend to identify strongly with their performance and read significance about their self-worth into the grades and evaluations they receive. You can be supportive of your students and still be tough on their work. If you avoid blaming them for unsuccessful work, show them you have confidence that they can improve it, and give them clear, specific feedback about things they can change, they will have good reason to do the same for you.

Some of what you can do to get feedback about your teaching from your students is a natural extension of what you do to check their comprehension and get them involved in class. Normally, you ask questions to determine if an explanation has been clear, for example. It is only one step farther to ask students what would make your explanation clearer for them. If you ask people to work in pairs for a few minutes to summarize what you have been presenting, you can also ask them to report back what clarification they need. The reports of several pairs of your students will give you some insight into making adjustments in your approach to presentation.

These requests for feedback ask for information that you can put directly to use in improving your teaching. A strategy for acquiring more is to look for other opportunities to compare your sense of what is going on in class with your

students' experience of it. One useful way to do this is to end the class ten minutes early one day and ask your students to write a summary of it. This can be especially informative about a discussion class. Tell them to write down the main points of the discussion or the main ideas covered in the class. You might also ask them to say what they found interesting or confusing that day. Make it clear that the exercise is not a quiz, they they are doing it to help you think about your teaching, not to get a grade. When you review their summaries, compare your objectives for that class with what it meant to your students. Another device you can use to gather data about their experience is the chain note. Circulate a notebook and ask your students to write a brief note and pass the notebook on. They can take a note on what the class content is at that moment, what they are thinking or feeling, or what they observe in the classroom then. When you get the chain note back, you will have an interesting sample of what students were thinking, feeling, and noticing during your class.

Asking students to confer about their experience of the class and then report their collective opinions is another basic way to gather feedback. Because it involved students in some discussion before they express their conclusions, this approach can yield rather thoughtful responses. It also tends to make students less inhibited by allowing them to match their thoughts and to generalize their comments. Ask them to generate statements about what they find satisfying and frustrating about the class and about what suggestions they

have for improving it. They can take a few minutes of class time to talk in pairs or small groups, then consolidate their comments and give them to you. Excuse yourself while you do this, or ask a colleague you trust to come in and facilitate the process. This person should explain that only general findings, not individual comments, will be passed on to you.

You can also use a variety of written instruments to ask your students for feedback. The Office of Instructional Services (OIS) provides an all university course evaluation which allows for individualized questions written by the instructor. Many departments on campus have their own evaluations used by members of a given faculty. Students can fill out questionnaires outside of class, typing them to preserve anonymity if necessary, and return them to you by having one student act as the collecting agent or simply by putting them in an envelope taped to your office door. As an alternative, they can tabulate their individual responses and give you a composite.

The timing and design of written feedback instruments have a strong impact on their usefulness. When it is still the middle of the semester and they have just been to your class, students can make direct references to their immediate experience. Such evaluations are much more likely to be informative than what they have to say after the course has ended. At mid-semester, it is also apparent to them that you can still use their feedback to improve their classes, so they have more incentive to give you thorough and constructive responses than they do later. From your point of view as

well, it is preferable to get the feedback while you can still use it to improve the class.

The design of a written instrument is important because students will respond to the questions as you frame them. Giving students specific cues produces more forthright, informative responses than asking only general questions. If you ask them whether you indicate important points, explain the thinking behind your statements, and make clear transitions, they will tell you. It is also more productive to encourage students to state their problems than to ask them to tell you about your faults. "I never understand where we're going," says more, and may be easier to say, than "The teacher is disorganized." It may also be easier to read. First-person reports are inherently less judgmental than third-person attributions. If you want help with framing questions for your students, the Office of Instructional Services (OIS) staff will show you several examples of effective questionnaires you can use; they will also help you design your own. (See appendix for illustrative example.)

Once you have collected feedback from your students, you can respond to it by making specific changes in your classroom practice if the feedback is sufficiently clear and consistent enough to indicate what would work. Whether you need clarification or not, another useful response is to discuss their feedback with your students. You can test your perceptions of what it means, clear up misconceptions they may have, and revise the implicit contract between you and your students. If they have reported that they are often confused,

for example, you can invite them to ask questions more often and even tell them effective ways to ask for your help. Discussing their feedback with them demonstrates that you actually want to improve the class and that you welcome their participation in doing it. Such a conversation can sometimes bring about constructive change simply by occurring.

Student feedback can be perplexing as well as informative. It is often contradictory, and sometimes simply mysterious. Before you attempt to apply it or talk it over with the class, you may want to find some assistance in making sense of it. Faculty in your department can be very helpful to you. Professional staff in the Office of Instructional Services will also help you interpret any evaluations that you receive, whoever initiated them.

One of the most unsettling things about beginning to teach is the discovery that it is quite challenging to sense and understand what is happening in the class at the same time one is teaching it. A direct response to this challenge is to ask someone to help you observe and interpret your class. There are many people you can ask to visit - another teaching assistant, your faculty advisor or mentor, someone in your department whose teaching you respect. The faculty members who are officially in charge of courses and curriculum supervise teaching assistants to varying degrees. Some visit classes on their own initiative, but it is always possible to invite them to visit your class and discuss your teaching with you. Whoever the observer is, it is a good idea to talk briefly with that person before the visit in order to explain

your concerns and what you want to know about the class.

In addition to the colleagues you might choose, consultants are available by arrangement with the Office of Instructional Services. OIS offers the service of videotaping a class at your request. This is accomplished through either signing up for GS770, Teaching Analysis Using Video Tape (a one credit course offered through the Graduate School) or by making special arrangements through OIS. This is a particularly useful process because it enables you to observe the class yourself as well as talk to a consultant about it. The Office of Instructional Services will facilitate the process of video tape review. In some instances this can be accomplished by working with someone from the person's home department, or where requested, from another department. This brings another perspective to bear on the teaching assistant's work and gives the observer access to valuable information as well.

Another productive strategy for improving your teaching is to turn the whole scheme of observation around by visiting other teachers' classes. These can be sections led by other teaching assistants in your department or classes in your department that you know, or have heard, are well taught. Videotapes also play a part in this strategy. The OIS has a number of thought-provoking tapes of and about teaching that you can observe. Tapes obtained from the GS770 course are also available as examples of graduate student teaching in a variety of settings. Such excerpts stimulate remarkably rich discussion of the challenges of teaching a course and the

various approaches faculty and teaching assistants employ in their teaching.

Interacting with other teaching assistants in the same course and with advanced Graduate Teaching Fellows and lecturers is certainly one of the best ways to improve your teaching. The common focus of the course and the multiple resources of the group create an unmatched opportunity. A number of departments meet regularly to discuss course content and teaching strategies, but if yours does not, you will be well repaid for any time and energy you contribute to organizing such conversations. They are good opportunities to draw on the advice of your more experienced peers.

The opportunities to examine and improve your teaching at Colorado State are multiple and varied. To some extent, they all require your initiative and your conviction that teaching is improvable. Given that teaching is a learning process, that it relies on corrective input from students, it follows that teaching is indeed a learnable skill, not simply an innate gift. Experience is a major factor in improvement, but active inquiry into one's own practice and effective use of available resources can accelerate experience significantly. The improvement is rewarding because students' learning also improves, and so does their relationship with the teacher. But the reward is not only the satisfaction of doing a better job for others. It is also the growth of personal capacity and the development of professional skills.

Useful references on teaching and learning are on closed reserve in the CSU library, used in conjunction with the

Seminar on College Teaching (GS 792) offered through the Graduate School.

YOUR ROLE AS COUNSELOR/REFERRAL ADVISOR

Working with undergraduates is certainly a challenge well worth the effort. There are times, however, when you may ask yourself, "What am I doing in this situation--no one ever told me about having to deal with a student's personal problems." Consider the following, for example:

* A student enters your office and, after a bit of small talk, tells you that she is thinking of dropping out of college and wants your advice.
* A student calls you at home one evening and sounds disturbed. Upon further probing on your part, the student tells you that he is fed up with school and life in general and is considering suicide.
* After class, a student follows you to your office and in the process of your "walking conference" apologizes for poor performance on examinations and relates that it is because of a drug problem. The student asks for advice on where to seek assistance.
* You notice that a particular student in class suddenly appears to have a problem staying awake and frequently drops off to sleep. Not only is this a distraction to you, but it appears to effect students sitting next to him. Upon inquiry you find that the student has two jobs and, as a result, is not getting a sufficient amount of sleep. In order to finance his education and raise a family, the student must work. He has a 3.9 GPA but does not have any form of scholarship or

financial aid. He asks if you know to whom he might talk for information on scholarships.

* You are visiting with a student in your office who seems to have experienced a rapid decline in test performance and is also beginning to miss class frequently. In talking with the student you find that her parents have just informed her that they are getting a divorce. She seems very upset and needs help.
* After a major examination, one of your students calls you and schedules an appointment. You note that she missed the examination. When she tries to explain her reason for being absent she breaks down and indicates that she thinks she might be pregnant. She doesn't know what to do, to whom to talk, or what she should do about it. She asks for your advice.

Situations like these are rather common in a college undergraduate environment. When students have problems, they often experience stress, anxiety, and general helplessness. They need assistance. Fortunately, Student Services professionals are available on campus and can deal with the full range of personal problems. Chances are you are not equipped to offer adequate professional assistance, but the problem confronts you on the spot. Your best strategy is to refer the student to the proper person who can help. In the meantime, however, learn to be a good listener. Show empathy and understanding. Avoid being judgmental. Communicate an attitude of confidence that the problem has a solution, but

that the student should seek professional assistance which is available. Take the initiative to assist the student in contacting the person or office on campus equipped to deal with the problem. You may even go as far as to contact the person or office while the student is present. Or perhaps, walk with the student to the place where help is available. The following referral agencies are available to all students. Familiarize yourself with some of the key individuals associated with these services and know where they are located:

Advocacy Team:	
El Centro/Hispanic Student Services 178 Lory Student Center	491-5722
Black Student Services 205 Aylesworth Hall	491-5781
Native American Student Services 316 Student Services	491-1332
Office of Resources for Disabled Students 112 Student Services	491-6385
Office of Women's Programs 112 Student Services	491-6384
Services for Asian American Students 100 Aylesworth N.E.	491-3690
Alcohol Education:	
Education/Programming/Counseling/ Consultation Student Health Center	491-0999
Career Counseling:	
University Counseling Center C36 Clark	491-6053
Career Information and Job Placement:	
Career Services Center 176 Lory Student Center	491-5707
Emergencies, Complaints, Legal Problems:	
Colorado State Police Department	491-6425
CoPIRG	491-7847
Consumer Hotline The Cave, Lory Student Center	491-5017
Legal Services and Ombudsman 200 Lory Student Center	491-1482
Office of Equal Opportunity 314 Student Services	491-5836

Victim Assistance Team (sexual assault victims)	491-7111
University Counseling Center C36 Clark	491-6053
Finances:	
Financial Aid 204 Student Services	491-6321
Student Employment 133 Student Services	491-5714
Student Accounts Receivable 100 Johnson Hall	491-6466
Veterans Information 303 Student Services	491-6731
Health Concerns:	
Center for Alcohol Education Student Health Center	491-0999
Health Educator Student Health Center	491-1702
Student Health Service	491-5118
Student Health Insurance	491-5118
Housing:	
Office of Housing and Residence Education 108 Student Services	491-6511
Renter's Information Lory Center Programs Complex	491-2248
Information:	
Campus Information-On Campus Dial *0, Off Campus	491-1101
Roadhouse (student-operated Information and Crises Center)	491-5744
Student Directory Information	491-6387
University Libraries-Morgan Library	491-5911
International Programs	491-5917
Personal Counseling:	
Student Health Center	491-1702
University Counseling Center C36 Clark	491-6053
Registration and Student Records:	
Records and Transcripts	491-7148
Degree, Residency	491-7159
Transfer, I.D. Cards 100 Administration Annex	491-7147
Study Skill Assistance:	
Academic Advancement Program 100 Aylesworth Hall, N.E.	491-6129
University Counseling Center C36 Clark	491-6053

General Problems, Questions

Non-Traditional Age Student Programs 09 Administration Building	491-7753
Office of the Ombudsman 200 Lory Student Center	491-1482
Student Relations Services 02 Administration Building	491-5675
Withdrawal from the University 02 Administration Building	491-6387

Colorado State University

Office of the President
102 Administration Building
Fort Collins, Colorado 80523
(303) 491-6211

March 17, 1986

To: All University Personnel and Students

From: P. E. Austin, President
A. J. Linck, Provost/Academic Vice President

Subject: Sexual Harrassment

Colorado State University reaffirms its intention to create and maintain a work and study environment for faculty, staff, and students that is fair, humane, and responsible -- an environment which supports, nurtures, and rewards people on the basis of such relevant considerations as ability, performance, dedication, and diligence.

Abusive treatment of individuals on a personal or stereotyped basis prevents the attainment of this University objective. The University deplores, condemns, and will act energetically to prevent and stop sexual harassment as a special form of such abuse. Because of its inherent nature, recent recognition, and incidence, sexual harassment requires particular attention for its elimination from the campus.

Sexual harassment includes behavior ranging from unthinking and often unintentional denigration of a person, class, or group on the basis of unsubstantiated sexual stereotyping to sexual assault. Such behavior typically falls into one of five classifications of sexual harassment: 1) Generalized "sexist" remarks or behavior; 2) unwanted and offensive, but usually sanction-free, sexual advances; 3) solicitation of sexual or sex-related activity by promise of rewards; 4) coercion of sexual or sex-related activity by threat of punishment or denial of rewards; and 5) actual sexual assault. Such behavior is intolerable in an academic community.

To assure the fulfillment of the University objective, all faculty, staff, and students are requested to assist in the elimination of sexual harassment and other forms of personal abuse. Administrators and faculty have a heavier responsibility in this regard because of the roles they play in the creation and maintenance of a campus environment conducive to teaching, learning, and creativity.

Incidents of sexual harassment, as all forms of abuse, should be brought promptly to the attention of the person responsible for the event during which the incidents occur. Such individuals may include student leaders, professors, department heads, deans, or other administrators. Those who

for personal reasons choose not to mention the incidents to the persons having such responsibility are urged to discuss the incidents with the Director of Personnel, Dean of the Graduate School, Vice President for Student Affairs, Office of Equal Opportunity staff, Provost/Academic Vice President, or President. Such reports will be handled in a confidential and responsible manner, with appropriate action taken.

The University has formal procedures to deal with problems that occur relating to violations of University policy. As this statement indicates, the University has policies against sexual harassment. When incidents of abuse occur, the University will take the action appropriate. However, in order to enforce the policies, the University will need the cooperation of those persons who have suffered abuse by their willingness to present evidence in formal proceedings initiated against the abusers. However, the University will not release information unless those providing it agree to its release.

Only through cooperation will we eliminate personal abuse, and with it sexual harassment, from the campus. Unless we do so, we shall not have fulfilled our collective responsibility to create and maintain a campus environment conducive to teaching, learning, and creativity.

Thank you for your assistance.

ADDITIONAL TEACHING AND LEARNING RESOURCES

Several resources to assist in the teaching and learning process have already been mentioned in this handbook such as the possibility of having one's class videotaped for the purpose of feedback and evaluation. Other campus resources that may be of interest to you are identified below.

1. Audio-visual equipment

   A number of departments have some equipment available to faculty and G.T.A.'s for use in class. However, if there is something you need such as an overhead projector, a slide projector, a cassette player, or other items of audiovisual equipment, these may be checked out from the audiovisual desk in the Office of Instructional Services, A71 Clark. There is no charge for class usage.

2. Closed circuit television system

   The University has an extensive closed circuit television system with TV sets in over 200 classrooms on campus. Located in the Office of Instructional Services is a videotape catalogue listing over 6,000 instructional videotape resources, and you are welcome to come over and acquaint yourself with it. Arranging for showing of the videotape(s) selected is very easy by simply contacting Instructional Services at ext. 1325 and providing tape number, time for showing, and room number. If you happen to be in a classroom without a TV set, your departmental secretary can

arrange a change very often with another member of the department or through university classroom scheduling.

3. Film library

   A film library is maintained in Instructional Services, and a catalogue is available to you. Films and projectors may be checked out at the audiovisual desk.

4. "Let's Talk Teaching"

   This forum occurs on the first Tuesday of each month during the regular academic year. The series was begun over eleven years ago, and all presentations have to do with teaching matters. Meetings are held during the noon hour in Rm. 164ABC of the Student Center, and one may either bring lunch or buy it in the Food Court. Announcements of the specific topics are distributed through the departments. Topics for this fall series, beginning October 6, include motivating students, incorporating the effective domain into instruction, and the dilemma of the traditional lecturer.

5. Microcomputer Services Organization

   MSO, as it is commonly called, is primarily a faculty development facility and resource provided by the Office of Instructional Services. Although priority must be given to faculty and staff, equipment and software is also available to graduate students for anything but word processing. For example, one might wish to use software for figuring grades. The lab is

located in 221 Weber Building.

6. Words, Etc.

   This new facility in the Lory Student Center offers students computer hardware and software at a cost per user hour. Word processing is available with Word Perfect software, and Lotus 1-2-3 and R:Base 5000 are also on hand. Students may bring their own software, too. The system is connected to other selected computers on campus, and eventually access to the Morgan Library database is planned.

7. Laboratory in Composition

   The English Department offers computer aided instruction in composition to students wishing to use textual analysis for their writing of papers for any class. To request the use of the lab, which requires a professor's signature to attest to a paper assignment in a particular class, students go to 300 Eddy Building.

8. Writing Center

   Also under the English Department is a Writing Center available to all students. This center is located in 130 Johnson Hall, and individual consultation on writing projects is provided.

9. Art Resources

   The University has several art galleries including the Clara Hatton and Directions Galleries in the Visual Arts Building and the Duquesne Lounge and Curfman Gallery in the Lory Student Center. The

changing exhibits in these areas can supplement a wide variety of course work.

Selected Bibliography on College Teaching

The books listed below are on closed reserve as part of the course requirements for GS 792, Seminar on College Teaching. The book by Joseph Lowman, Mastering the Techniques of Teaching may be purchased at the CSU Bookstore.

Centra. J. A. 1981. Determining Faculty Effectiveness. Jossey-Bass Publishers, San Francisco, Washington, London. This book provides a rationale and procedures for evaluating the full range of faculty responsibility and the proper roles of administrators in the process.

Eble, K. E. 1977. The Craft of Teaching. Jossey-Bass Publishers, San Francisco, Washington, London. One of Eble's best books on the profession of teaching with good sound advice for improving teaching effectiveness.

Entwistle, N. and d. Housell, Ed. 1975. How Students Learn. Institute for Research and Development in Post-Compulsory Education, University of Lancaster, Bailrigg. Now out of print, this little primer presents a succinct version of some of the more classic theories applied to classroom instruction. The theories range from mechanistic to humanistic. A good place to start on the relationship of theory to practice.

Hoover, K. H. 1980. College Teaching Today. A Handbook for Post-secondary Instruction. Allyn and Bacon, Inc. Boston, Sydney, London. A sort of how-to-do-it-book covering most of the important topics for the classroom teacher. Practical and useful.

Lowman, J. 1984. Mastering the Techniques of Teaching. Jossey-Bass Publishers, San Francisco, Washington, London. Currently used as the required text for GS 792, Seminar on College Teaching. Lowen presents an interesting model of teaching based on intellectual excitement and interpersonal rapport along with chapters on topics which span the total range of faculty teaching and student learning.

McKeachie, W. J. 1986. Teaching Tips: A Guidebook for the Beginning College Teacher (8th ed.). D. C. Heath and Co., Lexington, Massachusetts. Now in its eighth edition, this little paperback presents useful strategies for handling the day to day demands of college teaching. A widely used and cited reference.

Milton, O. and Associates. 1978. On College Teaching. Jossey-Bass Publishers, San Francisco, Washington, London. An excellent presentation of important topics associated with college teaching, with an emphasis on non-traditional approaches.

Milton, O. and J. W. Edgerly. 1977. The Testing and Grading of Students. Change, New Rochelle. A very practical paperback on the basics of writing examinations and how to interpret the results. Topics of reliability, validity, norm referencing, and criterion referencing are nicely presented.

Colorado State University

Student Course Evaluation
Office of Instructional Services

Instructor's Name _____

Course Number _____

Section Number _____ Date _____

PROCEDURES

1. The instructor selects a student or other person to administer and collect the questionnaires.
2. The instructor provides the student with any special instructions, copies of the questionnaires, a copy of the COVER SHEET, and a large envelope addressed to the Office of Instructional Services.
3. The student distributes and collects the questionnaires.
4. The student delivers or places the envelope in campus mail to the Office of Instructional Services (A-71 Clark).

PART I: DEMOGRAPHICS

MARK YOUR COLLEGE
- Agric Sci ○
- Arts, Hum & Soc Sci ○
- Business ○
- Engineering ○
- For/Nat Res ○
- Hum Res Sci ○
- Natural Sci ○
- Prof Studies ○
- Vet Med & Biomed Sci ○

ARE YOU:
- Frshmn ○
- Soph ○
- Junior ○
- Senior ○
- Grad ○
- Other ○

EXPECTED GRADE IN THIS COURSE
- (A) ○
- (B) ○
- (C) ○
- (D) ○
- (F) ○
- Pass ○
- Fail ○

GPA at CSU
- 3.5-4.0 ○
- 3.0-3.49 ○
- 2.5-2.99 ○
- 2.0-2.49 ○
- 0.0-1.99 ○

PART II: EVALUATION

INSTRUCTOR EVALUATION My overall evaluation of the instructor is:		COURSE EVALUATION My overall evaluation of this course is:	
Excellent	(E)	Excellent	(E)
Good	(G)	Good	(G)
Average	(A)	Average	(A)
Weak	(W)	Weak	(W)
Poor	(P)	Poor	(P)

PART III: INSTRUCTOR PROFILE ITEMS (1-14)

(E) Excellent (G) Good (A) Average (W) Weak (P) Poor (N) Not Applicable

1	Preparation for classes	E	G	A	W	P	N
2	Regularity and promptness in conducting classes	E	G	A	W	P	N
3	Establishment of clear course objectives	E	G	A	W	P	N
4	Achievement of course objectives	E	G	A	W	P	N
5	Organization of the course	E	G	A	W	P	N
6	Presentation of subject matter	E	G	A	W	P	N
7	Clarity of assignments	E	G	A	W	P	N
8	Establishment of grading standards	E	G	A	W	P	N
9	Correlation of grading to course material	E	G	A	W	P	N
10	Evaluation of student progress	E	G	A	W	P	N
11	Appropriateness of workload	E	G	A	W	P	N
12	Availability outside of class	E	G	A	W	P	N
13	Intellectual challenge of the course	E	G	A	W	P	N
14	Overall quality of the learning experience	E	G	A	W	P	N

PART IV: INSTRUCTOR SELECTED ITEMS (15-28)

(E) Excellent (G) Good (A) Average (W) Weak (P) Poor (N) Not Applicable

Complete according to your instructor's directions.
If applicable, these questions are to be provided on a separate handout or written on chalkboard.

15	E	G	A	W	P	N
16	E	G	A	W	P	N
17	E	G	A	W	P	N
18	E	G	A	W	P	N
19	E	G	A	W	P	N
20	E	G	A	W	P	N
21	E	G	A	W	P	N
22	E	G	A	W	P	N
23	E	G	A	W	P	N
24	E	G	A	W	P	N
25	E	G	A	W	P	N
26	E	G	A	W	P	N
27	E	G	A	W	P	N
28	E	G	A	W	P	N

PART V: WRITTEN COMMENTS

Please write your comments and/or suggestions in the blank section below.

Following are possible items for consideration: (1) command of subject matter, (2) enthusiasm for teaching and learning, (3) stimulation for students to do creative work, (4) effectiveness in advising, (5) effectiveness in using new techniques, (6) promotion of mutual respect in a climate free of discriminatory behavior.

This all-University form is available to faculty and Graduate Teaching Assistants at any time during a semester. For more information and procedures contact the Office of Instructional Services, A71 Clark Building, Ext. 1325.

NCS Mark Reader EH0035331
CCS 1985

Colorado State University

Student Course Evaluation
Office of Instructional Services

Cover Sheet

Instructions to Faculty

1. A completed copy of the cover sheet must accompany each set of questionnaires.

2. Return cover sheet and questionnaires directly to the Office of Instructional Services, A71 Clark.

Instructor Name	Phone
Department	
Campus Mail Address	
Course Number	Section
Date Administered	
Name and department of person to receive questionnaires and results if other than instructor shown above.	

INSTRUCTOR'S LAST NAME | FI

COURSE NUMBER | ALPHA

SECTION NUMBER

DATE ADMINISTERED: MONTH | DAY | YEAR

SEMESTER
- FALL
- SPRING
- SUMMER

OFFICE USE ONLY

DATE RECEIVED

RESULTS SENT

81

82